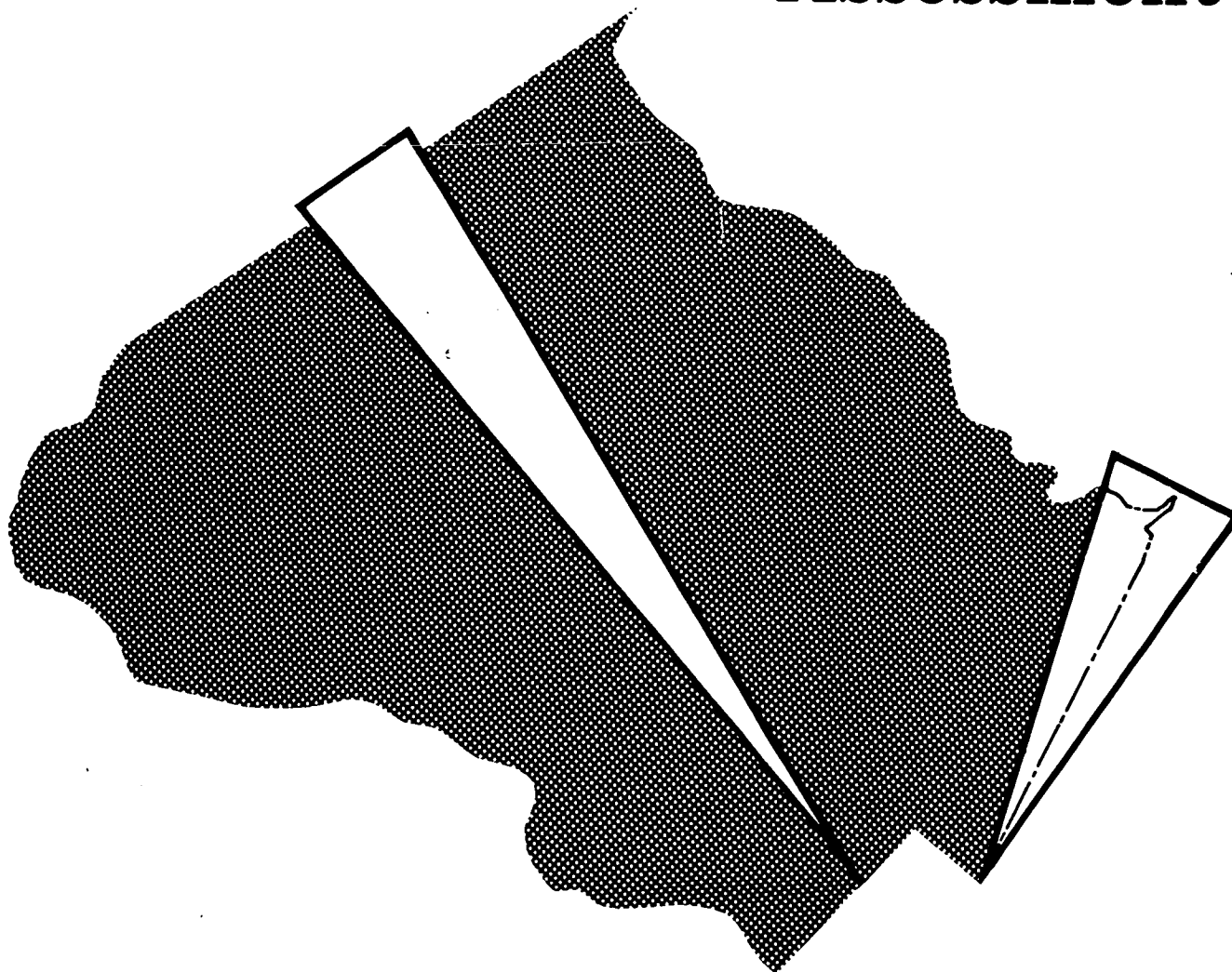


GENERAL PLAN

Assessment Study



January 1988

THE MARYLAND-NATIONAL CAPITAL
PARK AND PLANNING COMMISSION
8787 Georgia Avenue
Silver Spring, Maryland 20910



ABSTRACT

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ABSTRACT: This study examines the adopted General Plan from the perspective of how well the current zoning envelope is balanced in comparison with currently planned transportation and waste disposal facilities, and how well this balance relates to the fiscal, economic and social needs of the future.

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Introduction

This study assesses how well Montgomery County will function if it continues to develop or "build out" in accordance with the General Plan, titled "...on Wedges and Corridors." This assessment is responsive to questions raised during the public dialogue of the last several years on the general subject of growth management, staging, and the Adequate Public Facilities Ordinance.

In 1986, legislation was enacted establishing an Annual Growth Policy (AGP) to be adopted by the County Council, which sets annual subdivision growth ceilings based on public facilities contained in the adopted Capital Improvements Program (CIP). With Council approval of the first AGP in 1987, a new plateau of policy and implementation coordination was reached. This General Plan Assessment examines issues that affect the larger planning and zoning framework within which the AGP and the Adequate Public Facilities Subdivision Ordinance operate.

The study starts by reviewing the basic concepts behind the General Plan, and

assessing their current validity. The study then looks at the current relationships between major tools that implement the concepts in the General Plan. The relationships are assessed in terms of three basic questions.

First, will the County's current zoning result in more work trips than can be accommodated by the transportation network envisaged by the Master Plan of Highways? Second, will the buildout of the current zoning result in more sewage and solid waste than can be accommodated by existing and planned treatment capacity? Third, will the fiscal, economic, and social implications of the current zoning pattern satisfy the needs of the future?

The study is not a fully comprehensive assessment. It covers only a few of the most critical issues. Because of the importance of these issues, however, the report can provide a basis for discussion at the present time, and a point from which further analysis can proceed.

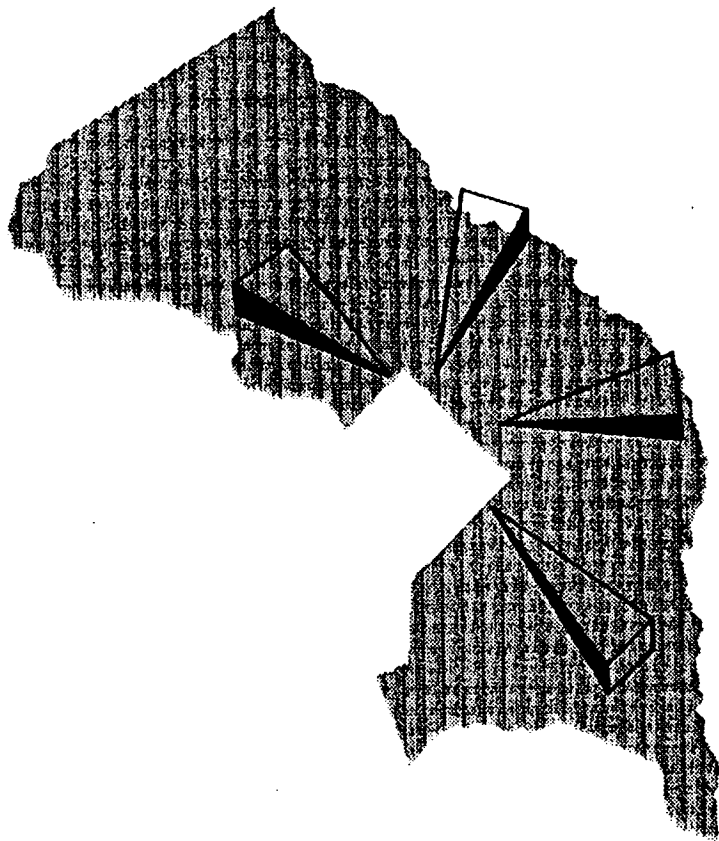


Figure 1A Wedges and Corridors Pattern

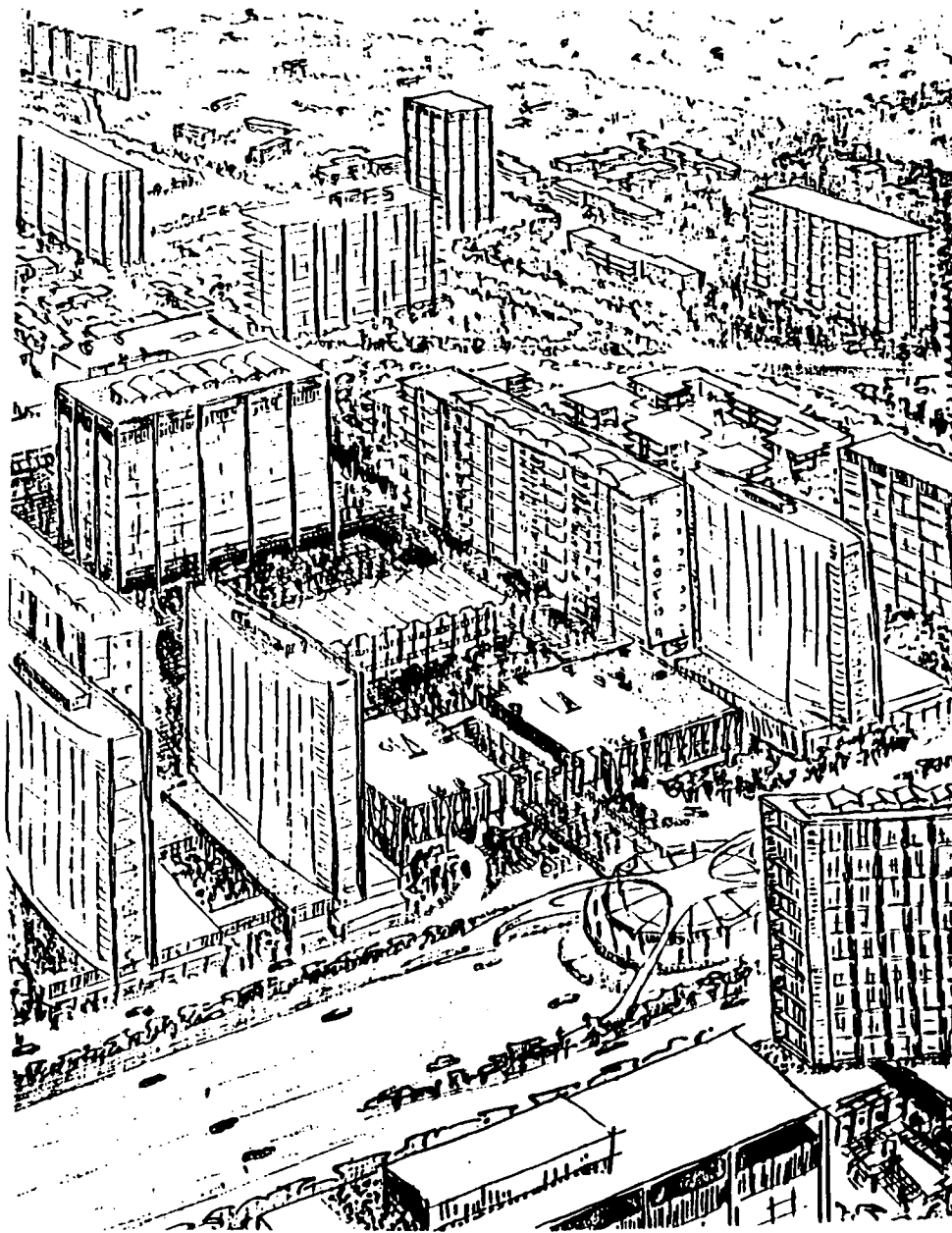


Figure 1B Corridor City Perspective

1.0 CONCEPTS

The General Plan's basic concept appears sound, since it still appears to provide a better solution to increasingly critical transportation and environmental issues than a more sprawling development pattern would provide.

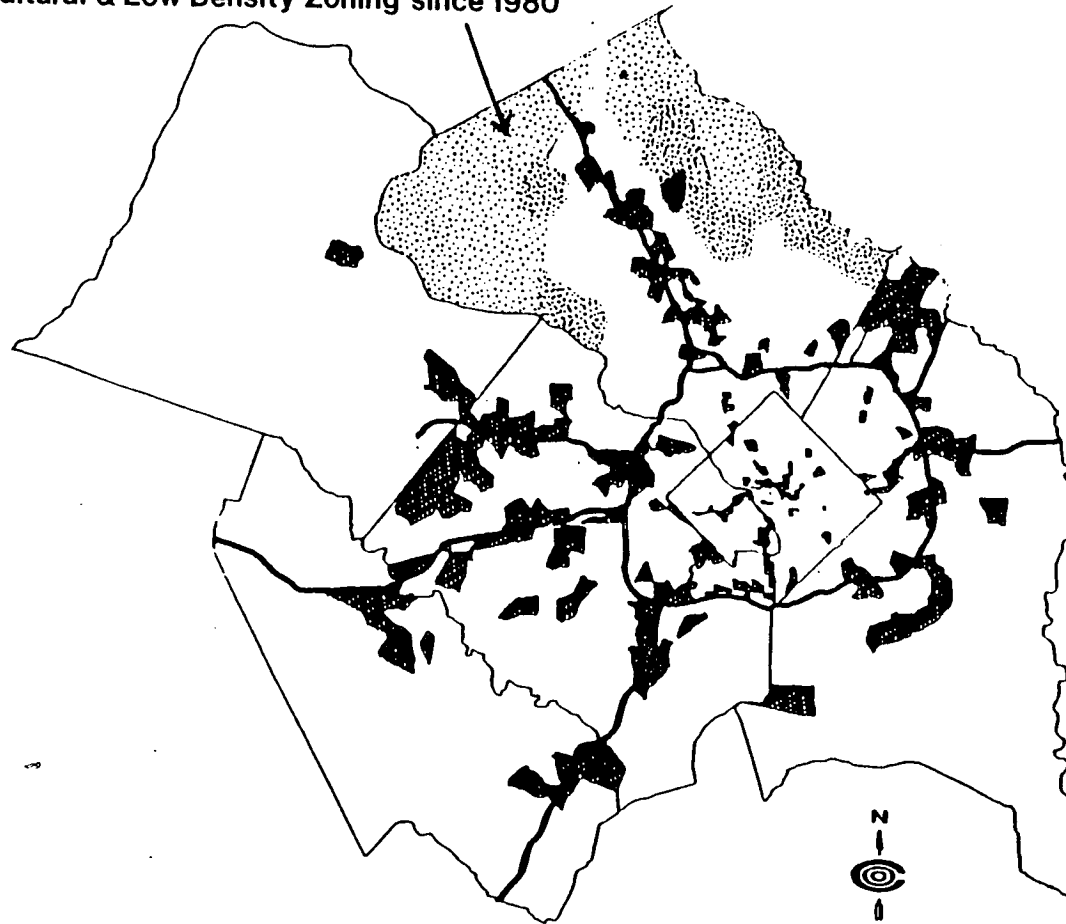
1.1 The General Plan's basic concept is a system of wedges and corridors, with employment and residential nodes concentrated in corridors served by rail transit and major highways. This spatial pattern is shown in Figure 1A.

The General Plan of 1964, titled "... On

Wedges and Corridors," includes one corridor in Montgomery County, along I-270, and a second along I-95 and the County's border with Prince George's County. The pattern proposed for the corridors is a string of cities served by a rail transit line and a major highway. The cities are about four miles apart, with transit stops about two miles apart. Each corridor city has a dense center served by rail and bus transit. A sketch of a hypothetical corridor city is shown in figure 1B.

The corridors radiate out from the District of Columbia. In between them are wedges of land reserved for agriculture, open space, quarries, and other low density uses. For the already developed southern part of the County, called the urban ring, the General Plan projects increasing density through in-

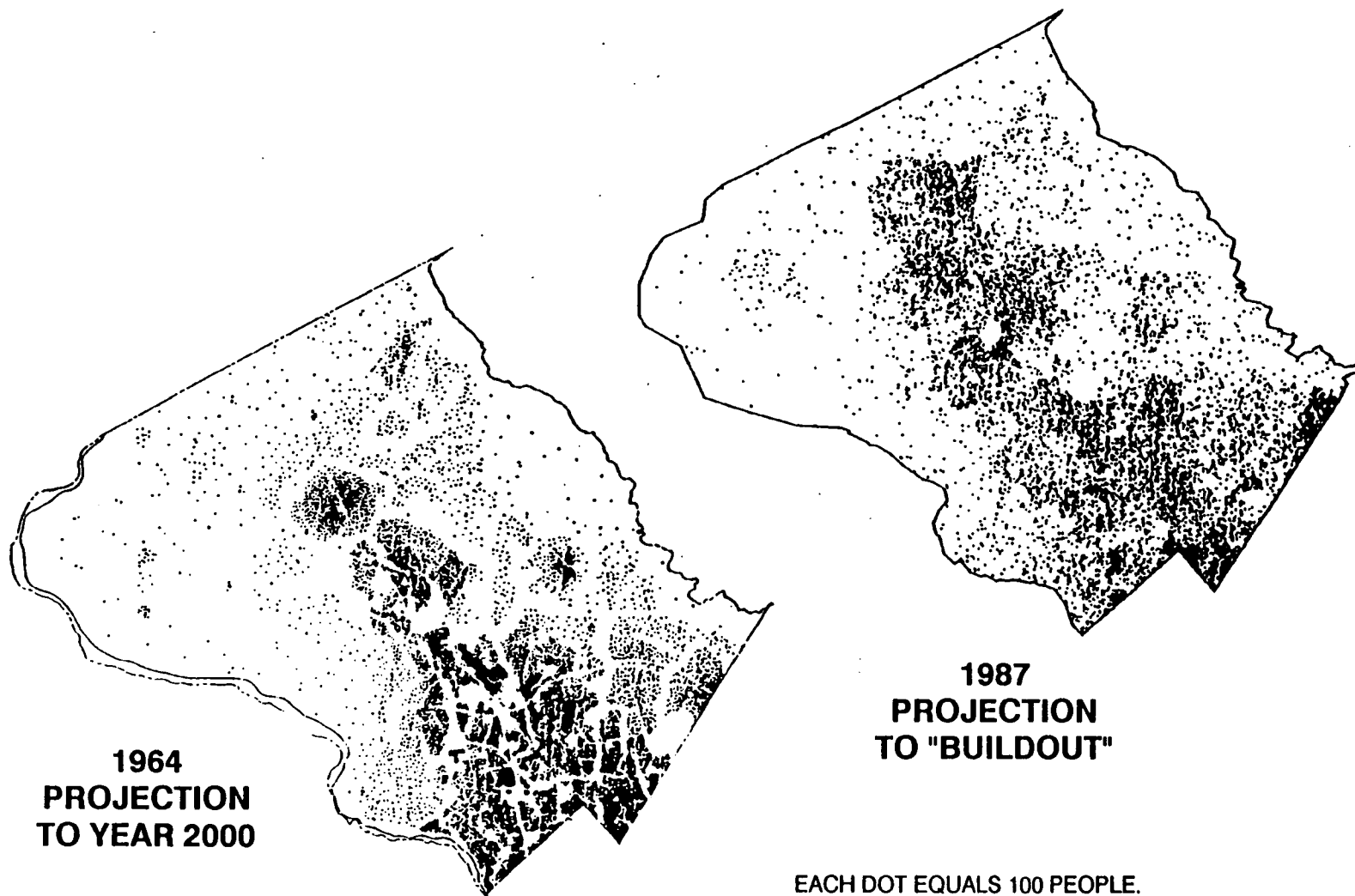
Agricultural & Low Density Zoning since 1980



***INCLUDES DATA THROUGH THE 3RD QUARTER
OF 1985, EXCLUDING FEDERAL GOVT. SPACE**

**Source: MWCOG Major Commercial Development
Inventory, 1985. Graphic Refinement by MCPD**

**Figure 1C Areas With 100,000 Square Feet of Commercial Development
Started During 1980-1985**



NOTE: 1964 PROJECTION WAS GENERATED BY U.S. CENSUS DATA BY CENSUS TRACT AND DOTS WERE PLACED BY HAND;
1987 PROJECTION WAS GENERATED BY TRAFFIC ZONE AND DOTS WERE PLACED BY COMPUTER.

Figure 1D Population Distribution Patterns

fill and redevelopment. For existing communities in the wedges, the General Plan projects preservation of their small-town atmosphere.

In practice, the County's development has been surprisingly faithful to the Plan's basic principles, particularly in comparison to the relative adherence shown to similar planning efforts elsewhere in the region and in the United States (see Figure 1C). However, growth in the wedge areas has been more intense than was foreseen; both the I-270 Corridor and the Route 1/I-95/Route 29 Corridor have developed in a more sprawling pattern than originally contemplated, and, in general, it may be said that the 1964 General Plan envisaged an end state with more dense urban areas and less dense wedge areas than has occurred to date (see Figure 1D).

Finally, the pace of employment growth in the County has exceeded the pace of residential growth to a degree greater than the original plan contemplated, particularly in the last few years; the number of persons per household in the work force has risen to unexpected levels; and the pace of new transportation infrastructure has fallen be-

hind the original plan's expectations. The first two factors in combination have increased the number of commuters in recent years to a level well beyond what was foreseen in the General Plan for this period of time; and the last factor has undercut the ability to handle this commuter traffic as well as the original General Plan intended.

1.2 The basic concept of the General Plan addresses the need to reduce traffic congestion, since concentration of origins and destinations, particularly for work trips, makes transit more attractive to riders and, therefore, more economically feasible.

The Short Term Traffic Alleviation Policy, adopted by the Council in 1986, makes clear that one of the County's main transportation objectives is to reduce the number of peak hour commuters in single-occupant vehicles. The technical term for such a reduction is a change in "mode share" or a "modal shift." "Mode" refers to the form of transportation used. To achieve this modal shift is difficult for many reasons, including the present relatively dispersed

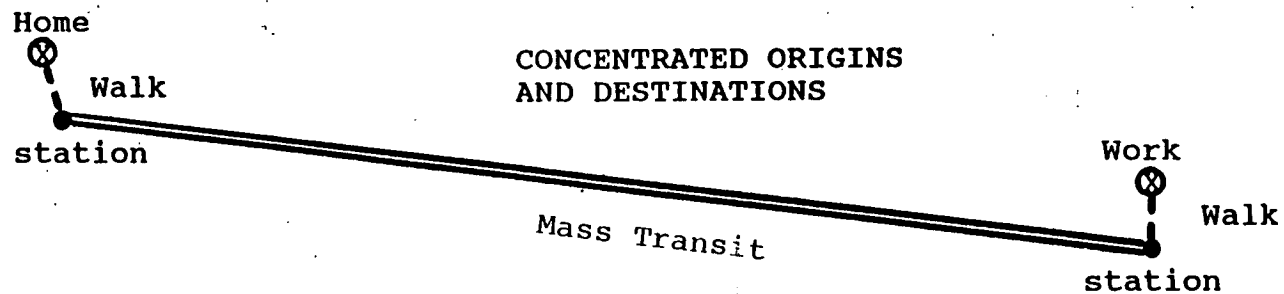
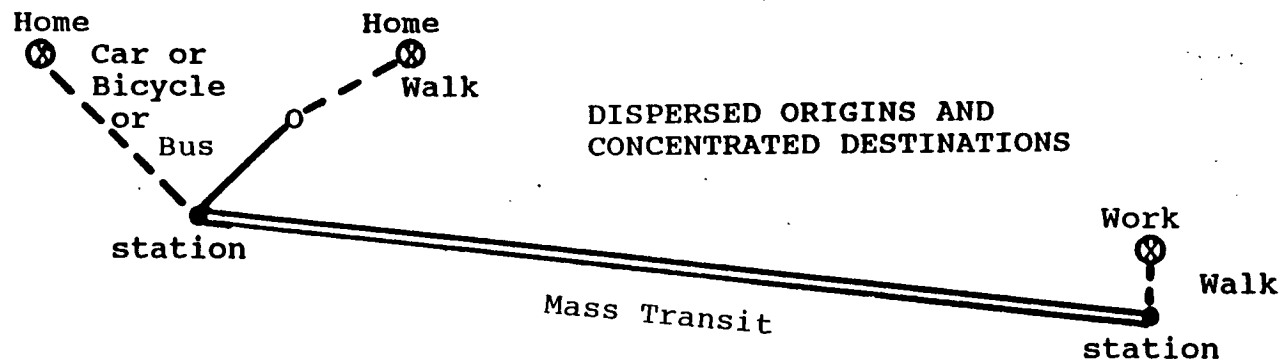
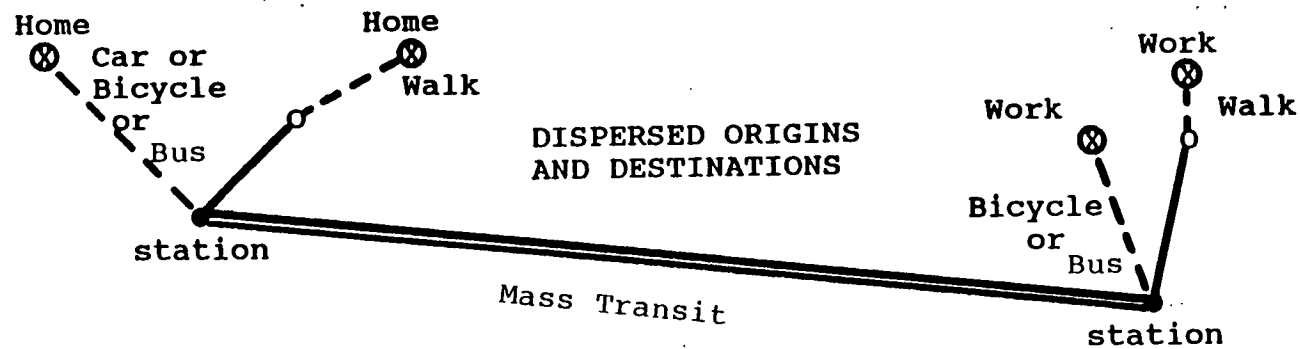


Figure 1E Concentrated and Dispersed Trip Origins and Destinations

pattern of work trip origins and destinations.

To get people out of single-occupant cars and into any form of shared vehicle, it is almost essential for the occupants of the shared vehicle to have at least a common origin or destination. Otherwise, the delays at both ends in pick-ups and drop-offs make ridesharing and transit service unattractive. As a minimum, origins and destinations must be along a shared trunk of some kind. As Figure 1E shows, the distance from the origin or destination to the trunk is critical to the number of transfers needed per trip.

The corridor concept provides for concentration of origins and destinations along a trunk. In contrast, typical suburban employment locations are in campus settings that create dispersed destinations for morning work trips and dispersed origins for afternoon work trips. Similarly, suburban single-family homes on large lots create dispersed morning origins and dispersed evening destinations for work trips.

In contrast to these typical patterns of suburban development, the wedges and corridors concept of the General Plan aimed at getting employment and, to a lesser extent, housing, to be concentrated in relatively dense nodes along the corridors. These nodes were intended to be transit-serviceable. Because of their employment and housing densities, it was anticipated that the nodes would, in effect, create common origins and destinations. They would help reduce the number of people who commute in single-occupant automobiles by creating, at origins and destinations, the mass necessary to make "mass" transit work.

Although the originally anticipated nodal densities have not yet been achieved, the wedges and corridors concept of the General Plan still seems to offer a way to create the necessary concentration of origins and destinations to make transit work better. The County's desire to get people out of single-occupant cars today reinforces the validity of the basic concepts of the General Plan developed twenty-five years ago.

1.3 The basic concept of the General Plan addresses the need to reduce air pollution and the need to preserve open space.

Modal shift away from single-occupant cars is as important for reducing air pollution as it is for reducing congestion. The most significant air quality pollutant in the Washington region is ozone, according to Federal air quality standards as monitored by the Council of Governments. The private automobile is the primary producer of hydrocarbons, which, in turn, produce ozone. The wedges and corridors concept of the General Plan, in making transit both more feasible and more attractive to the commuter, also makes improvement in air quality more feasible.

The wedge concept also supports a major environmental objective, the preservation of open space in both public and private ownership. In this context, it is worth noting that in an effort to preserve wedge areas, the County has developed a successful program of agricultural preservation by the transfer of development rights to other areas. The Agricultural Reserve is shown in Figure 1F.

1.4 The basic concept of the General Plan addresses the dependence of the local economy on imported petroleum.

The County's Comprehensive Energy Plan states that in 1980, County government and County residents spent more than \$333 million on transportation fuels, of which about 90% left the region. In contrast, when County residents use public transportation, about 75% of their fares go to local wages, most of which are spent on locally purchased goods and services. In other words, the basic concept of the General Plan, by making possible alternatives to the single occupant automobile, also makes possible improvements in the local economy. Although it must be recognized that successful transit service is not cheap from a County-wide fiscal perspective, it must also be noted that concentrating development in corridors so that it is transit-serviceable will produce a local economy that in the long run is less vulnerable to fluctuations in the cost of petroleum, and, incidentally, also provides more employment opportunities.

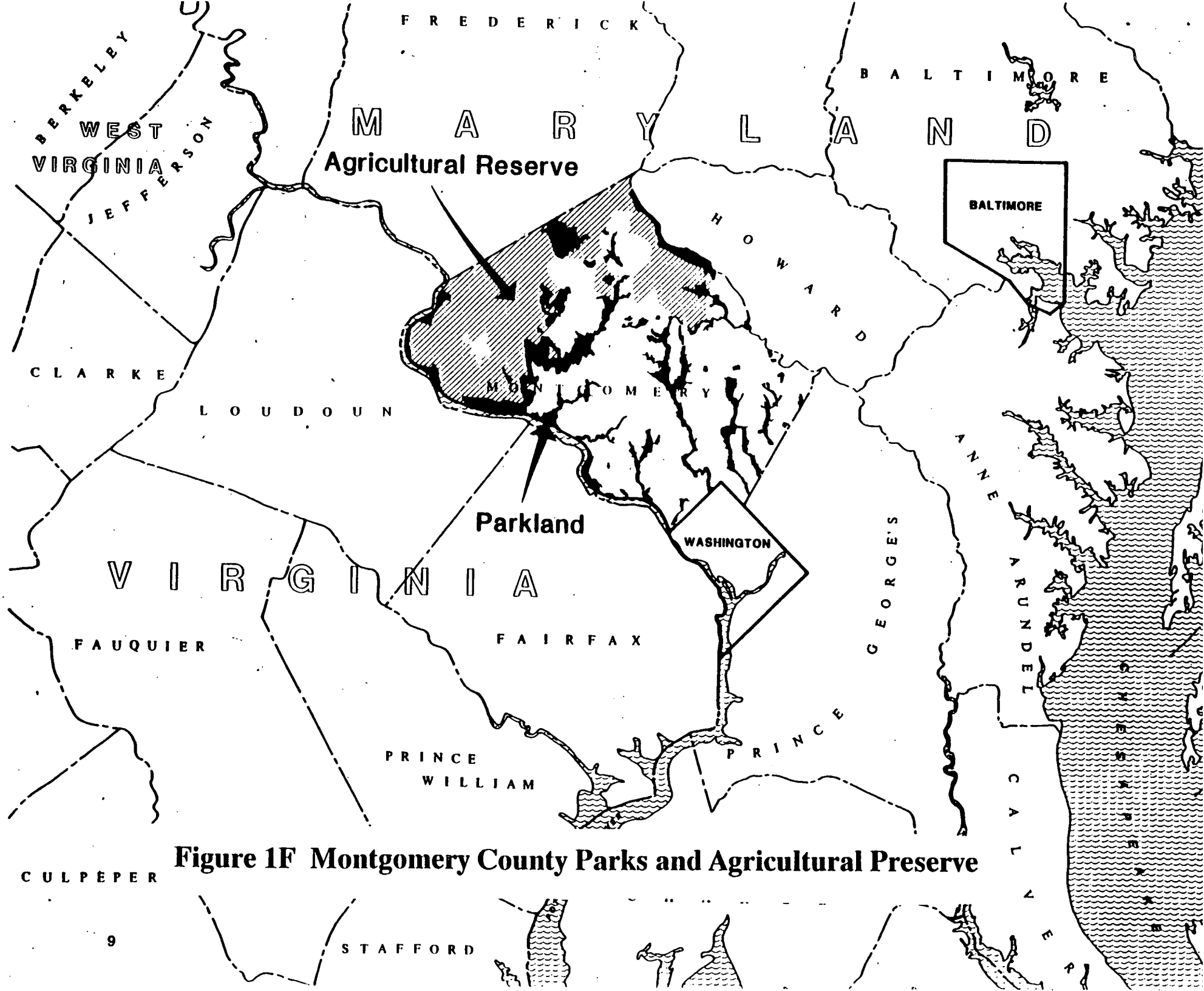


Figure 1F Montgomery County Parks and Agricultural Preserve

1.5 The basic concept of the General Plan addresses the need for fiscal prudence in the provision of public facility infrastructure generally.

Not only does the wedges and corridors pattern allow for the provision of transit service to a far better degree than a radial sprawl pattern, it also allows for a more cost-effective distribution of other public facilities and services. School bus service, and police and fire patrol services can be provided with less mileage to cover. Spatial compaction in general allows for economies of scale in the operational costs of public services, except when densities reach levels well above those contemplated by the General Plan.

1.6 The expansion of the Baltimore and Washington regions towards each other, as well as the growth of inter-suburban commuting, suggests that effective planning by individual jurisdictions will require increased coordination between jurisdictions.

In 1980 only 28% of the County work force commuted to the District. The vast majority of the remainder commuted between suburban destinations, as did similar proportions of the work force in other counties. In the absence of a major physical barrier like the Potomac River, such trips do not respect the boundaries of local jurisdictions. As a result, the growth in suburban jobs and continued growth in suburban housing have meant a corresponding growth in the degree to which development decisions outside the County affect conditions within the County.

The Route 29 Corridor provides a clear example. The Fiscal Year 1989 Annual Growth Policy, as currently proposed by both the Planning Board and the County Executive, closes the Route 29 Corridor (the Fairland/White Oak Policy Area) to any new subdivisions for housing or jobs until new road capacity is programmed. Prince George's County and Howard County, however, are not constrained by Montgomery County's Growth Policy. Both can continue to approve subdivisions for housing and jobs that generate trips on Route 29.

The General Plan foresaw close relationships between the County and adjoining jurisdictions. The spread of recent development to the next tier of suburban jurisdictions means that Montgomery County no longer contains the edge of the suburban frontier. In the future, this edge will be increasingly located in Frederick,

Howard and Anne Arundel Counties on the Maryland side of the metropolitan region. More effort will be needed in the future to insure that local jurisdictions coordinate their development in ways that permit effective planning, and do not hold each other hostage to decisions made outside of their boundaries.

2.0 TRANSPORTATION

While the basic concepts of the General Plan appear to be sound, the zoning and transportation infrastructure patterns that implement it may need adjustment to insure adequate long-term transportation capacity.

2.1 The zoning envelope for employment and housing may have to be more carefully defined, and investments in transportation infrastructure increased, in order to achieve acceptable levels of service on the road system.

The analysis of balance between the

present zoning envelope and the transportation network was done using the Commission's EMME/2 transportation model, referred to in the remainder of this study as the model. The analysis uses data from the zoning envelope and the planned transportation network to assess the relationship between the two at buildout. Before going into the analysis, however, some additional background on the model and its limitations may be useful.

The model has been calibrated by using data on transportation demand from the 1980 U.S. Census and a Washington Council of Governments auto use survey, as well as data on land uses and a.m. peak hour highway volumes from the late 1970s to mid-1980s. The model's basic building blocks are traffic zones. For this study, the

County is divided up into about 250 traffic zones. The model follows a conventional regional transportation modeling procedure, incorporating four steps: (1) generating trips by traffic zone, (2) distributing trips by traffic zone, (3) specifying mode shares, and (4) assigning estimated vehicle trips to existing and planned roads. More information on the model is available in Chapter 7 of the Planning Board's report accompanying the FY 89 Annual Growth Policy, Alternative Transportation Scenarios and Staging Ceilings, December, 1987.

Although analyses such as reflected in this report are impossible without a transportation model such as this, it is important to emphasize its limitations for long term projections. For short term projections, observed data and reasonable assumptions can be used. When the model is used to make long term projections, many more assumptions must be substituted for observed data, and they must be assumed to hold over longer periods. In addition, there is no reliable long-term data from the past with which to calibrate the accuracy of long term future projections.

It is also important to note that there are

many factors central to transportation analysis that are not explicitly dealt with in the model structure. Those factors could undergo radical change in the time it takes to build out the zoning envelope. To appreciate this problem, assume that buildout takes 50 years. Then imagine planners 50 years ago, in 1937, trying to anticipate traffic patterns for Montgomery County today. Neither the recent growth in two-worker households, nor the recent growth in suburban employment could have been reliably forecast in 1937. Both, however, have had a major impact on traffic patterns in the County in recent years.

Other changes that are equally significant but impossible to forecast also will occur over future decades, affecting the distribution of housing and employment throughout the Washington- Baltimore Metropolitan region. Although it is necessary to make assumptions in order to do any long range planning, the degree of uncertainty about them must be kept constantly in mind.

These limitations on the traffic forecasting process require that the reader understand that no exact picture of what actually will

happen under different long term zoning and public facility assumptions can be prepared. Instead, the results produced by the modeling process must be seen more as indicators of the likely transportation pressures and problems that may develop within the County as it approaches the conditions described in the scenarios of future development.

There is no laser beam of forecasting technology that can pinpoint realistic long term future conditions. The model, complex as it is, is still just a flashlight beam that spreads out and dims very quickly in the darkness of the unknown long term future. We must recognize the limitations of our tools, while simultaneously respecting their contributions.

2.2 The Maximum Jobs Test: A comparison of work trips to transportation capacity, (assuming the maximum buildout of the present zoning envelope and full development of the presently planned transportation facilities), suggests that congestion throughout the County under these conditions would increase to above

tolerable levels. However, there are strong reasons to believe that this is a purely hypothetical situation, which would never actually occur in the real world.

The Maximum Jobs Test looks at whether or not the transportation system planned for the County will be able to handle the total amount of growth permitted by current zoning. The Maximum Jobs Test incorporates the following major assumptions:

- Full buildout of current residentially zoned land, resulting in a total of 440,000 housing units in the County. Figure 2A shows the distribution of these units, with sub-categories showing the distribution within the overall zoning envelope of: (1) existing 1987 housing stock, (2) additional housing permitted by subdivisions already approved, and (3) net remaining housing capacity. Each column represents the capacity of a planning policy area as named along the bottom of the chart.
- Full buildout of all the land zoned for commercial and industrial use, generating a total of 1.5 million jobs. Commer-

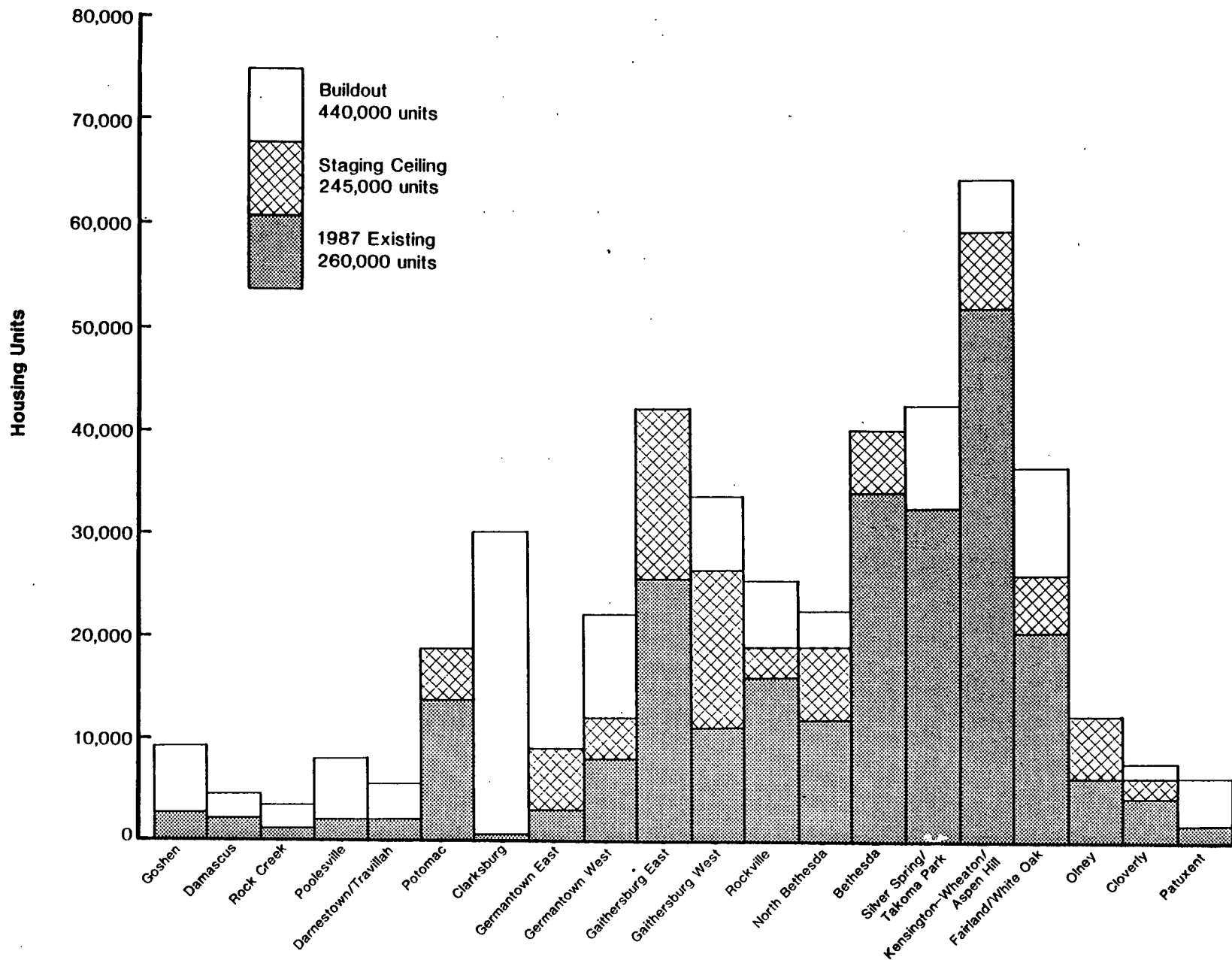


Figure 2A Housing Distribution at Buildout by Policy Area

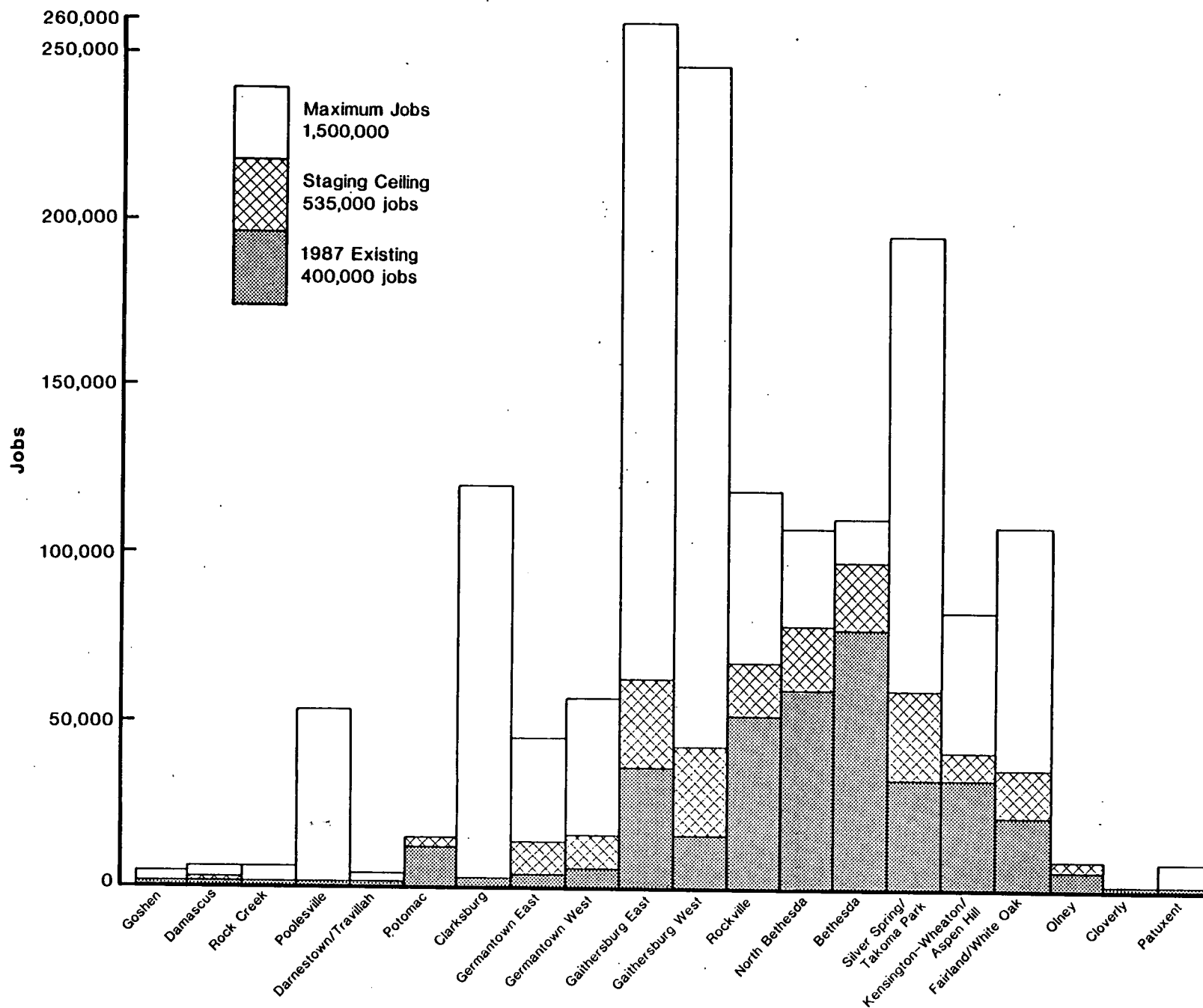


Figure 2B Maximum Jobs at Buildout by Policy Area

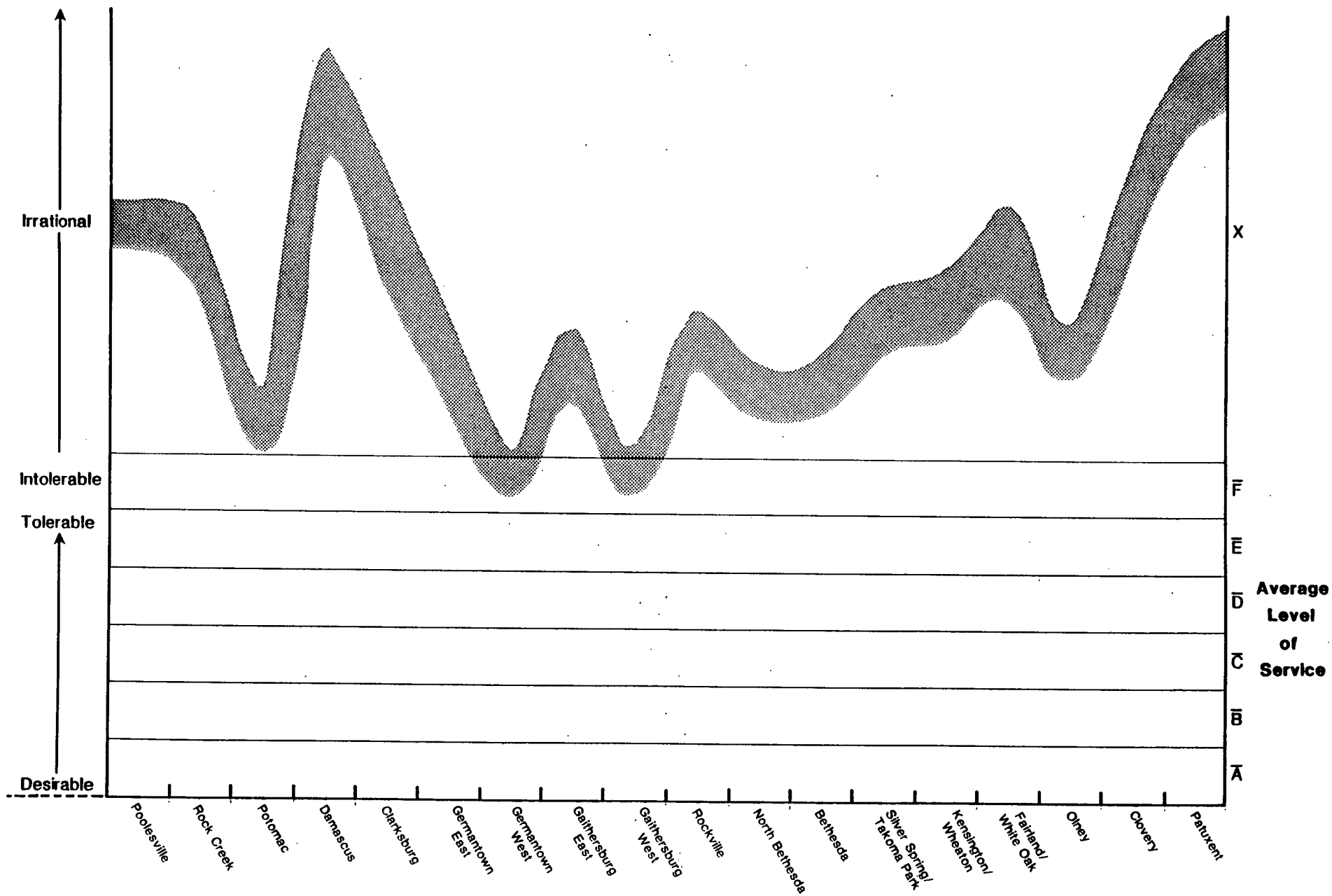


Figure 2C Congestion Levels From the Maximum Jobs Test

cial and industrial land, unlike residential land, often is not developed at its maximum floor area ratio (FAR--see Glossary for definition), and some zones, such as I-3, have no FAR limit other than setback requirements as height increases. To estimate the full number of jobs possible at buildout of the zoning envelope, it was necessary to estimate a theoretical maximum FAR at which development might take place. This was done by looking at development in those planning policy areas where commercial and industrial land has been relatively scarce in recent years, since it would need to be assumed under this scenario that such land would be similarly scarce as buildout approaches.

- (Note that it would take about 45 years to fill this zoning envelope, even at the boom rates of 25,000 jobs per year experienced in the last ten years. Under more reasonable average rates of even 15,000 per year, which is still high, it would take about 75 years. Clearly, there is a lot of capacity in the current employment zoning envelope.)

- Specifically, observed FARs of development from 1979- 1986 in the down-County policy areas of Bethesda, North Bethesda, Wheaton, and Silver Spring were used. Buildout for each zone over the whole County was assumed to take place at the 75th percentile of the observed FARs of the corresponding zone in the down-County area. In other words, for any given employment zone, 75% of the down-County FARs, on sites developed during the period 1979-1986, would fall below the FAR used to calculate jobs at buildout, and 25% would fall above it. The distribution of jobs by policy area under the theoretical maximum FARs defined above is shown in Figure 2B, with sub-categories similar to those in Figure 2A.

- Single-occupant automobile use reflecting today's level of transit and ridesharing with continued availability of free parking at most workplaces in the County.

Figure 2C shows the technical measurement produced when the land use

assumptions of the Maximum Jobs Test are put into the traffic simulation model. The chart needs explanation as well as interpretation.

The horizontal axis is marked off into vertical sections, each of which represents a different planning policy area. The sequence of these areas from left to right is one that generally runs along a line beginning in the western wedge area and then moving south from Damascus through the I-270 Corridor to Bethesda and Silver Spring, and from Silver Spring in a somewhat north-east direction generally along the Route 29 area to the eastern wedge area.

The vertical axis represents traffic congestion, with the lowest at the bottom and the highest at the top. Although this vertical axis is actually measured numerically, using an abstract calculation called the Volume to Capacity Ratio, it is described on the chart in terms of letters with bars above them, ranging from \bar{A} to \bar{F} and X. These letters represent average levels of traffic congestion over all the major roads within a planning policy area. These averages are statistically complex, but are necessary in

order to deal with large areas that have many road links and intersections within them. A complete description of the methodology behind these letter designations is contained in the Planning Department's staff document called Alternative Transportation Scenarios and Staging Ceilings, which was referenced earlier in this chapter.

The major point to keep in mind is that, although auto drivers would prefer level of Service \bar{A} , the maximum cost-effectiveness of the road system is achieved at levels of service \bar{D} and \bar{E} , because the roadways then are carrying the most vehicles per unit of road. This level of traffic congestion generally exceeds what people would like from a driver's perspective, but is not infrequently the best that they are willing to support in terms of taxes for new roads, or to tolerate socially in terms of new road construction that disrupts existing neighborhoods. Levels of congestion between \bar{A} and \bar{E} , therefore, are all "tolerable" but have differing degrees of social and political acceptability, and different objective safety and accessibility characteristics, depending on how the local area fits into an overall spatial pattern and on how many alternative

modes of travel or communication are available.

When we reach level \bar{F} , however, we may conclude that, except in unusual local circumstances, an area with this high an average level of service would produce an intolerable amount of vehicular congestion. At the top of the \bar{F} range, we approach gridlock. As vehicular road congestion approaches the \bar{F} level, it becomes easier to convince people that it would be wise to increase the density of occupancy of each vehicle. Single occupancy vehicles (SOV) are wasteful of expensive road capacity. Thus, carpooling is a way to increase the capacity of the road system without road construction (i.e. high occupancy vehicles, or HOV). To get more efficiency, it is necessary to shift modes from the auto to vans (i.e. private vanpooling) and buses, light rail, and rapid transit, above or below grade (i.e. public transit in general).

When the model was run, using the Maximum Jobs Test, it produced V/C ratios that are depicted by the wavy line on the chart. These fall above the F range in an area which we have labeled "X" for "irrational." By this we mean that the peak hour traffic

volumes produced by the zoning assumptions, after adjustment to account for reasonable amounts of transit usage, exceed the road capacity numerically of V/C ratio measure that falls above the \bar{F} range. This cannot happen in the real world, because the \bar{F} range acts as an effective ceiling on the real-world V/C ratio. Therefore, this test result from the model is an abstraction. It is not a real world measurement, and hence we depict it as falling into the "irrational" number zone designated simply as "X."

What this result reveals is that the test has pushed the model beyond its competence. The model has been set up to measure peak hour traffic. What the abstract results indicate is that the effective ceiling, which the F zone puts on real world traffic flow, would cause the zoning generated traffic to spread out in time, extending the peak hour to a peak period of a number of hours. Figure 2D illustrates this principle graphically.

The conclusion of this test, therefore, requires the interpretation of both Figures 2C and 2D as noted above. Time and modeling capability have not permitted the translation

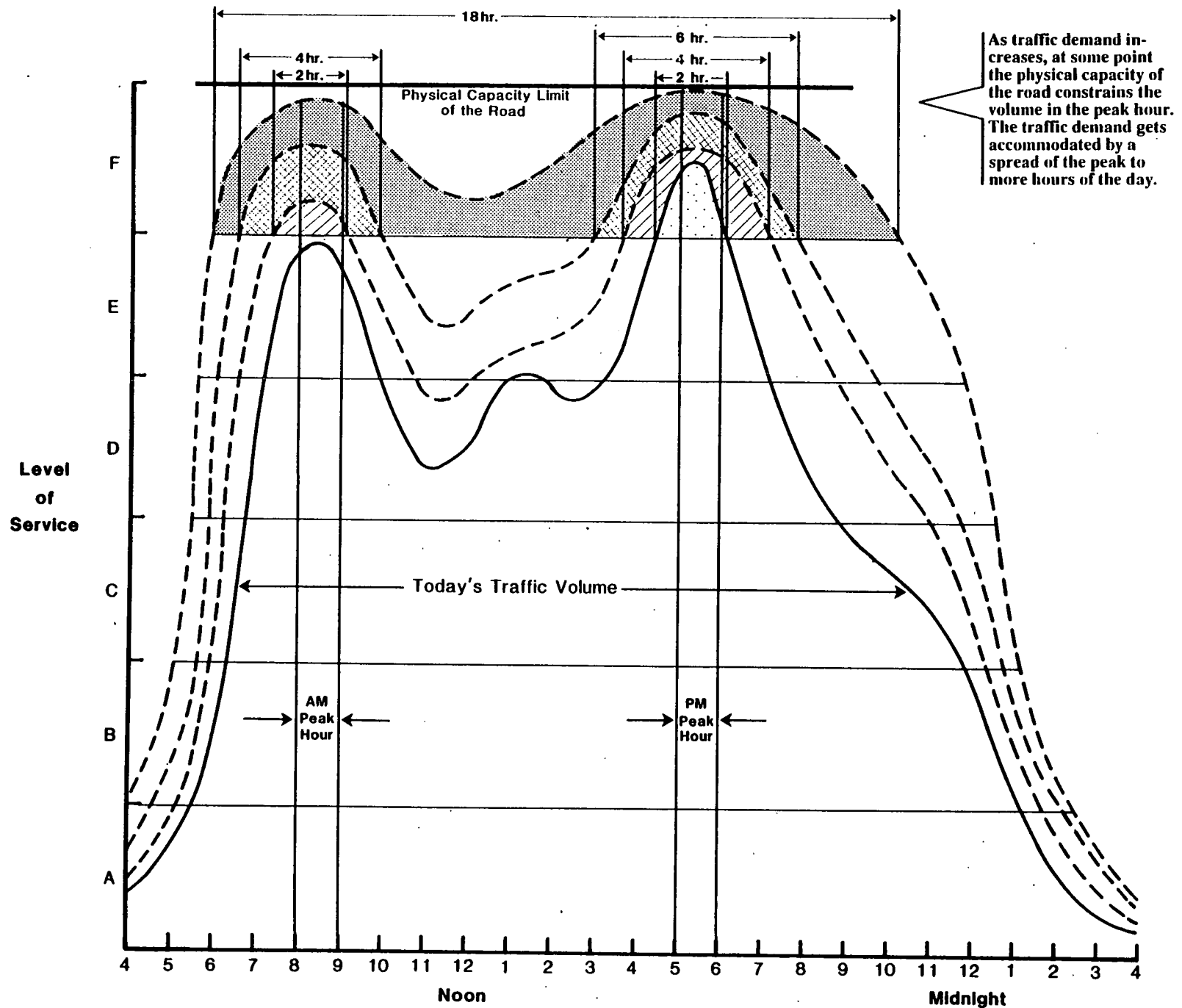
of the V/C ratio curves from Figure 2C to be transformed into precisely equivalent curves on Figure 2D. We conclude on a judgmental basis, nevertheless, this level of congestion would spread out over such a long peak period that it would create a highly undesirable and inefficient situation. If it were possible that this situation could actually become real, it clearly should be avoided.

However, it is important to recognize that this hypothetical situation is extremely unlikely, if not impossible, to occur in the real world. In the real world, the effect of the increasing traffic congestion would tend to affect land development and zoning policies well before the traffic congestion reached this level. Also it would be highly unlikely that Montgomery County could capture such a large share of the region's employment growth, while simultaneously limiting its housing growth to such a relatively low proportion. Chapter Four on Fiscal, Economic and Social Goals explains this point in further detail. There are strong reasons, therefore, to believe that the relative imbalance between potential housing and potential employment under the cur-

rent zoning envelope could not be sustained in the real world.

This may be easier to understand if the number of jobs involved is compared to familiar benchmarks such as the District of Columbia. Figure 2E shows the relative concentration of jobs in major employment centers under the assumptions in the Maximum Jobs Test. As the Figure makes clear, under the Maximum Jobs Test Gaithersburg would be a major employment center, exceeded only by the District of Columbia. In the real world, it is unlikely this much concentration of jobs in Montgomery County could occur, because of the tendency of the employment market to spread out also in Fairfax and Prince George's Counties, as well as in Frederick, Howard and Anne Arundel Counties.

Another sidelight is also worth mentioning. As noted in the assumptions above, the existing zoning envelope would permit up to 440,000 housing units and 1.5 million jobs, which would result in a jobs/housing (J/H) ratio of about 3.4. Such a high ratio implies that many workers from outside the County



As traffic demand increases, at some point the physical capacity of the road constrains the volume in the peak hour. The traffic demand gets accommodated by a spread of the peak to more hours of the day.

Figure 2D Spreading of Peak Hour Congestion Conditions to Additional Hours

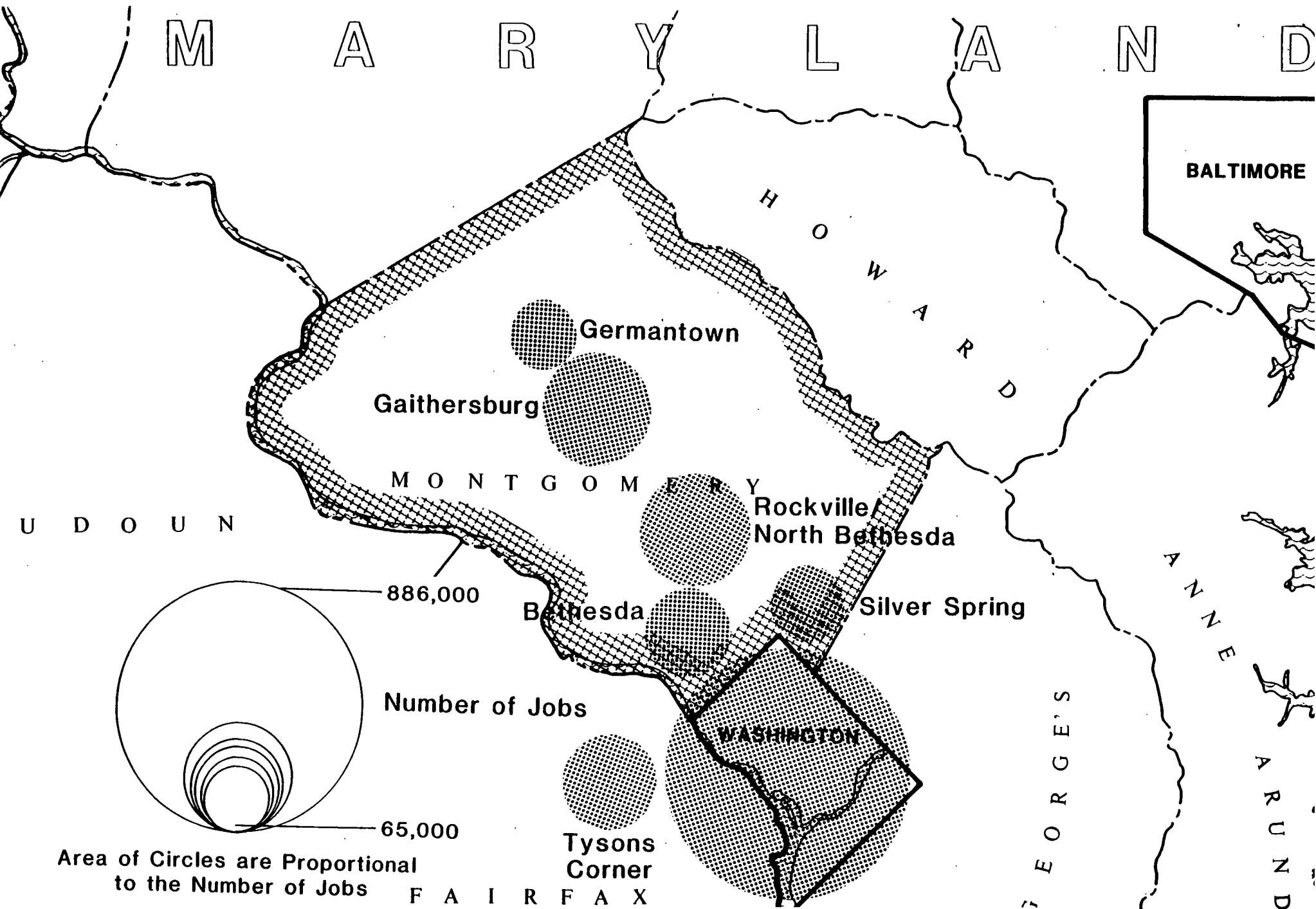


Figure 2E Regional Distribution of Jobs by Major Employment Centers

would be needed to fill the excess of jobs over resident County workers. If it ever did occur, such a high J/H ratio would produce a very high level of congestion, particularly in the wedges, since many of the workers would presumably come from new, exurban housing development not served well by the transportation facilities of the existing corridors. But it is highly improbable that it could ever occur for the reasons mentioned above.

In other words, the ratio of jobs to housing reflected by the full capacity of the present zoning envelope is not a balanced one from a practical perspective. Further elaboration of this point is described in Section 4 below.

2.3 The Transit Augmented Reasonable Jobs Test: When you assume a more reasonable employment buildout in proportion to the housing ceiling, together with some major additional transit improvements, the results of this test suggest that congestion can be reduced enough through a combination of these two approaches to retain tolerable and acceptable levels of service.

The second test of relationship between the zoning envelope and the planned transportation system is called the Transit Augmented Reasonable Jobs Test.

In this test, the assumptions made for residential development remained the same as under the Maximum Jobs Test. Additional assumptions were made, however, about improvements in transit, and about the density of development on land zoned for commercial and industrial uses as follows:

- Transit service would be extended north beyond Shady Grove using the proposed transit easement, and transit service also would be provided along the Georgetown Branch right-of-way, the Rockville Facility right-of-way, the Route 29 Corridor, and the Beltway to Northern Virginia. It should be noted that it was not necessary to define specific forms of transit for the purposes of this test. It was only necessary to assume specific changes in mode share for trips being made to or from areas with improved transit. Typically, however, such changes in mode share would be associated with transit service using its own right of way.

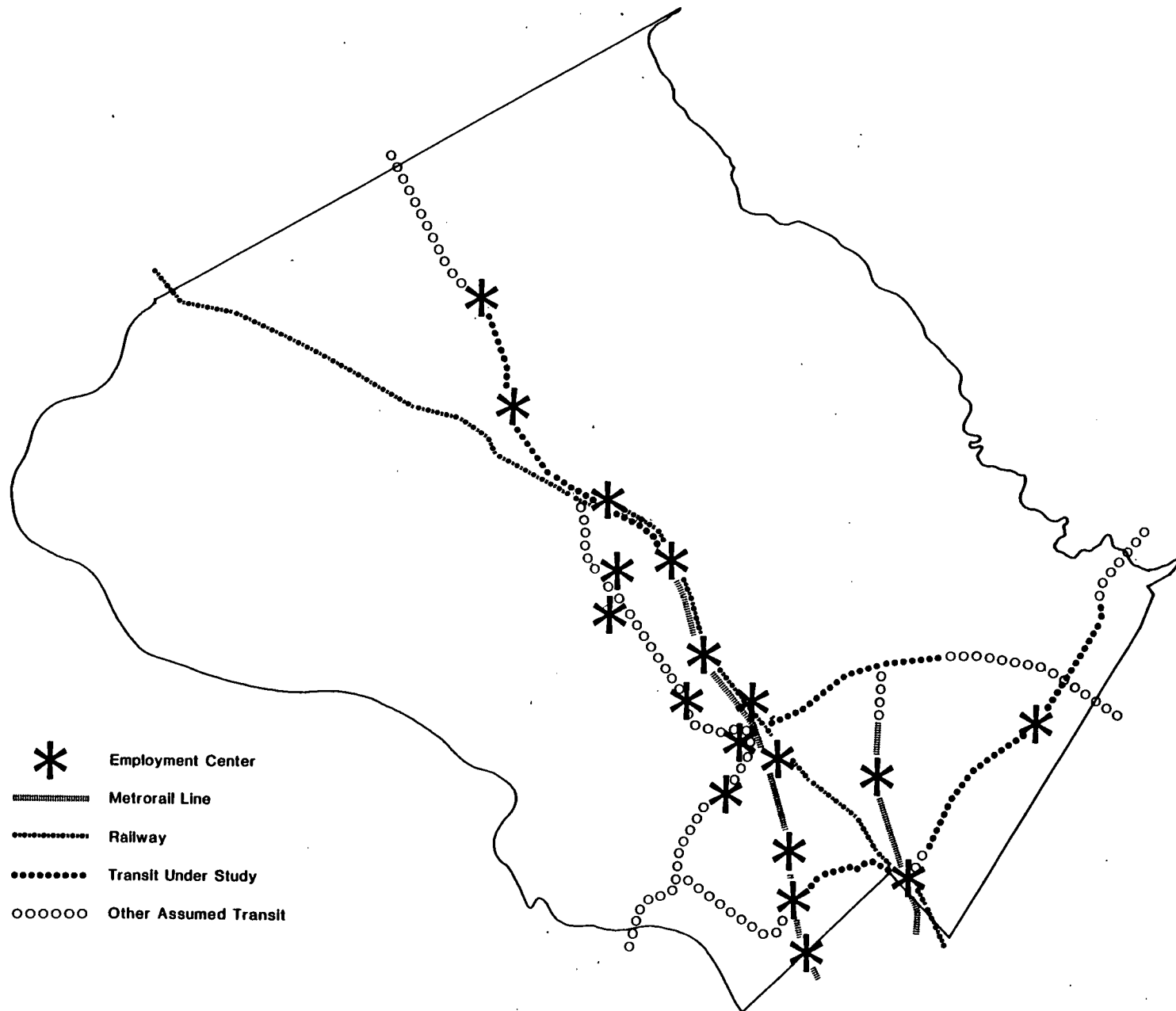
These transit improvements are illustrated in Figure 2F.

- The assumed changes in mode share are consistent with light rail, busways, or automated guideway transit in these corridors, providing fast and convenient transit service independent of roadway congestion. These mode shares also presume public policies supportive of public transportation -- the elimination of free employer-provided parking, more sidewalks, bicycle paths, and pedestrian ways.
- The lower job level was arrived at by beginning with the idea that it would be desirable social policy to have at least one job located in the County for each resident worker who lives in the County. Within this concept, it is recognized, of course, that a direct match up would never occur, and, that while an increasing percent of the resident workers would find suitable jobs in the County, not all of them would ever do so at any point in time.

- Using the current J/H ratio of 1.5, which satisfies the above standard, this approach would produce a total of 660,000 jobs to balance the 440,000 housing units of the zoning envelope. For simplicity, the number of jobs was increased to 750,000 so that it represented half of the job total used in the first test described above. These numbers yield a J/H ratio of 1.7, slightly more than necessary to satisfy a balanced worker to job relationship.

An allocation of this total (i.e. 440,000 housing units and 750,000 jobs) to the planning policy areas was made, based upon two main factors: a) the relative amount of available employment zoning capacity beyond the current subdivision approvals; and b) the relative amount of congestion in each planning area, based upon a trial test of a job level in between 750,000 and 1,500,000 jobs (not shown in this report). These allocations are shown in Figure 2G.

The Transit Augmented Reasonable Jobs Test results in average policy area Levels of



**Figure 2F Transit Facilities Assumed for the Transit Augmented,
Reasonable Jobs Test**

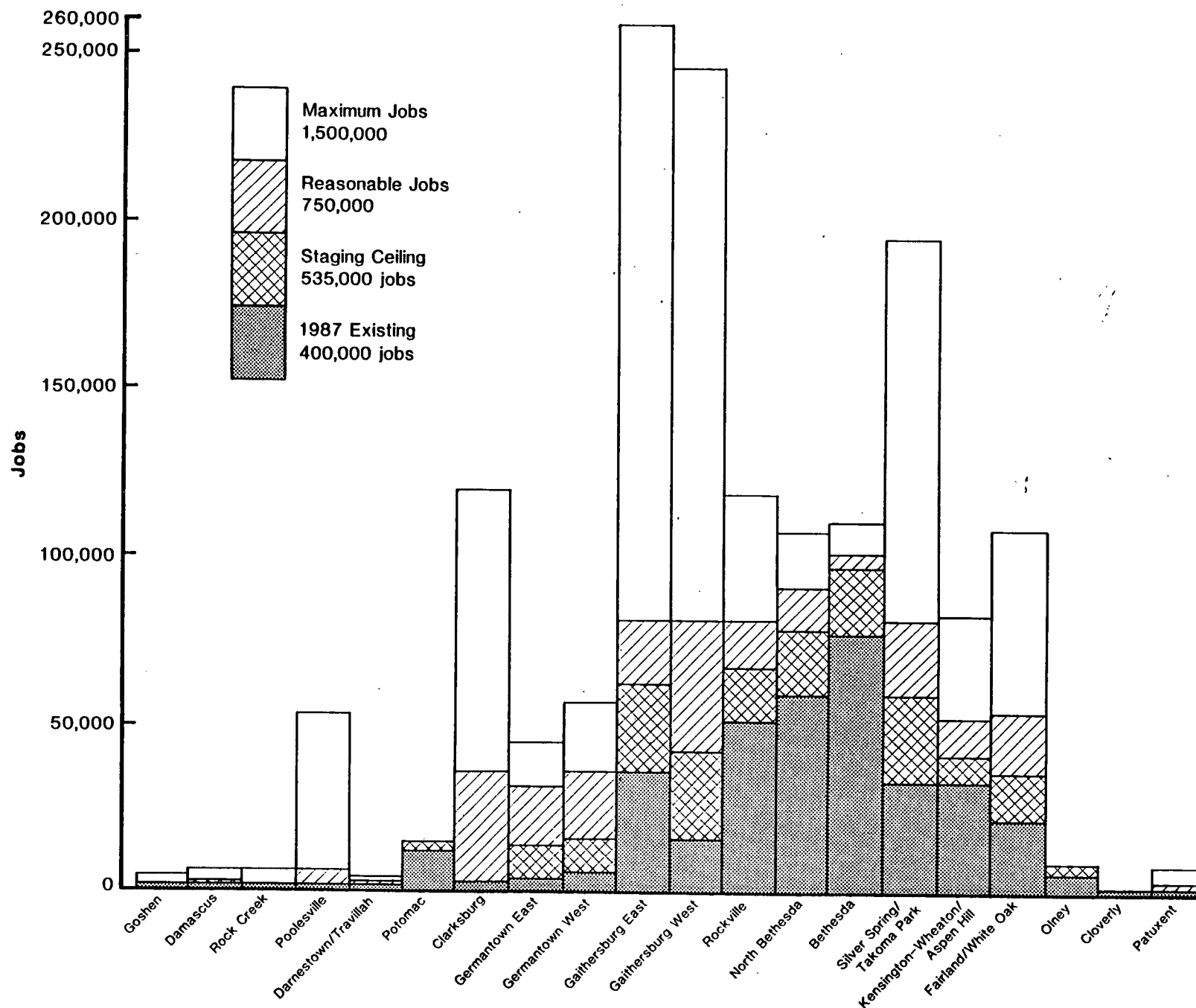


Figure 2G Reasonable Jobs at Buildout by Policy Area

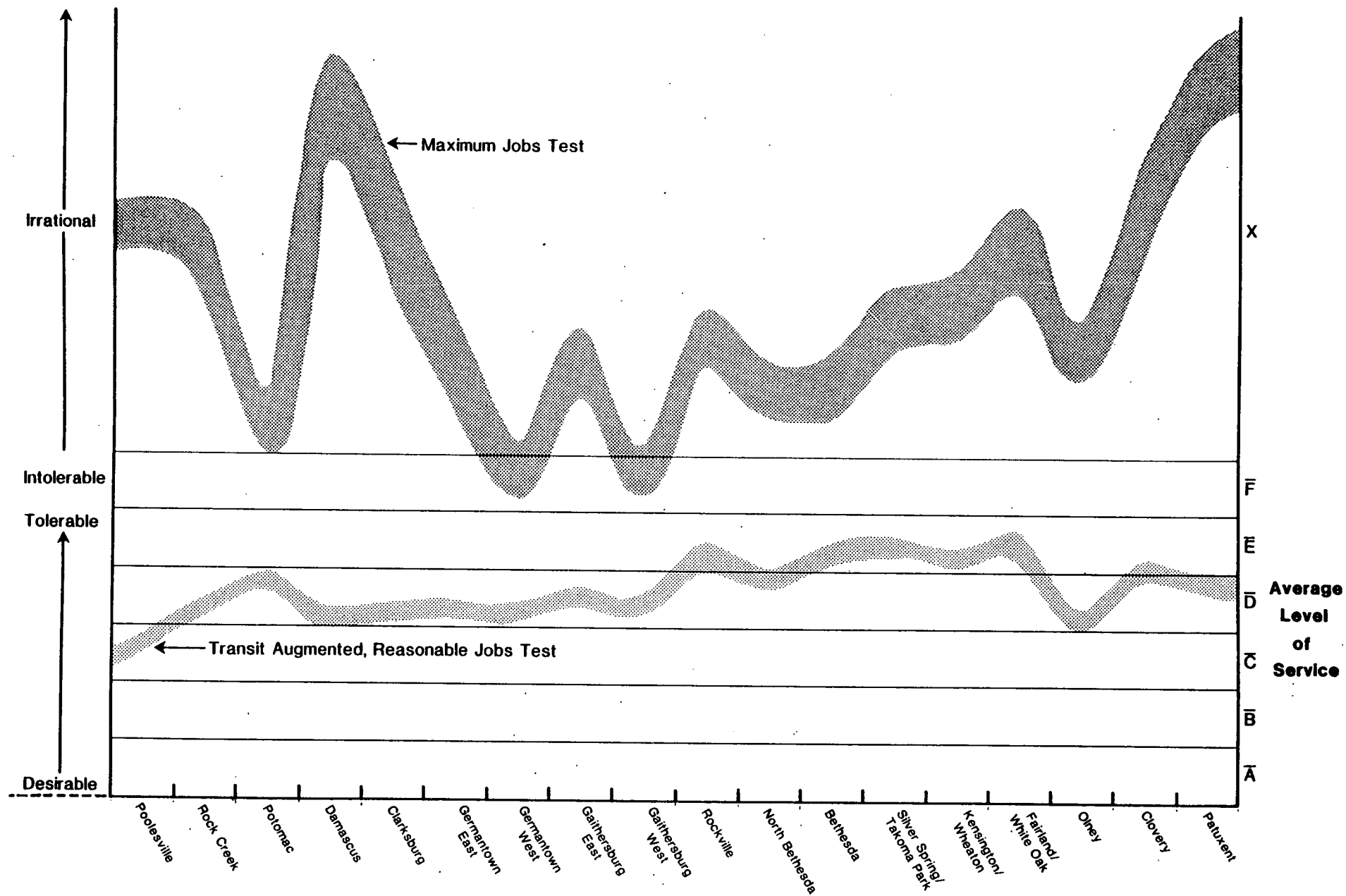


Figure 2H Congestion Levels From the Transit Augmented, Reasonable Jobs Test

Service that are within the tolerable range as illustrated in Figure 2H.

To give additional perspective, remember that the present FY 89 Annual Growth Policy sets standards for Levels of Service for each policy area (based on the current availability of transit to provide a reasonable alternative to the private automobile). Figure 2J compares the results of the Transit Augmented Reasonable Jobs Test to the current standards of acceptable traffic congestion set in the FY 89 Annual Growth Policy.

One additional point of explanation must be added before examining some of the implications of this test. The dotted lines that indicate changes in the standards of service reflect the fact that, when transit improvements are added to a policy area, the present AGP method would permit raising the level of congestion that can be tolerated in that area. When the changes in standards that would come with increased transit are considered, the results of Transit Augmented Reasonable Jobs Test move somewhat closer to the levels of service currently used for policy purposes in the AGP.

In summary, the Transit Augmented Reasonable Jobs test suggests that, at reasonable employment densities, and with a major investment in transit facilities, and probably with the addition of a series of traffic demand management measures, congestion can probably be maintained at reasonable levels under an end-state growth assumption of 440,000 housing units and 750,000 jobs.

At this point it is important to return to the caveats made about the transportation model at the beginning of this discussion. When the model is used to analyze events as far in the future as buildout of the zoning envelope, it is best thought of as a device to show pressures and tensions that may develop between the zoning envelope and the transportation capacity. In the real world these pressures and tensions provoke changes in other factors, such as development in other jurisdictions or revisions to the County zoning pattern, which would render the assumed relationships impractical. The corollary of this point is that the levels of congestion which the model projects should not be taken literally. Bearing those caveats in mind, however, the results of the tests suggest that congestion in the County

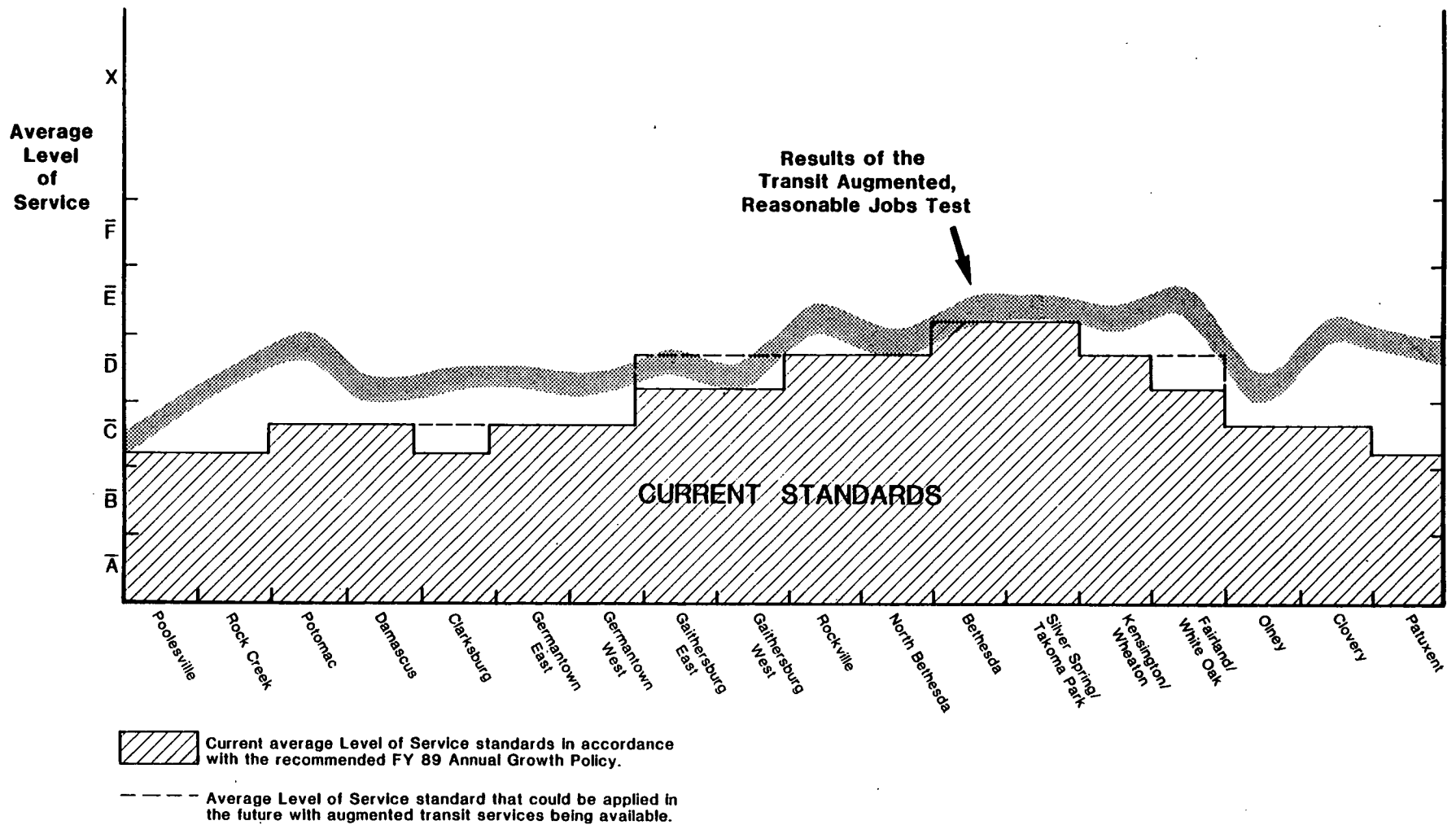


Figure 2J Projected Congestion Levels Compared to Current Standards

can be maintained at reasonable levels as future growth occurs within the framework of the existing General Plan, provided sufficient money and effort are expended to manage the situation.

2.4 It is reasonable to expect that further reductions in congestion could be achieved if employment were concentrated to a greater degree in local areas that can be made transit serviceable. Other permutations in micro-scale adjustment of the J/H ratio would include concentrations of housing in similar transit serviceable concentrations.

The following section describes a possible and partial solution to some of the potential problems in the existing patterns of development revealed by the above analysis. It was not pursued as a model test in order to insure that the focus of this study remain on an "assessment" of the General Plan, not on all the permutations of alternative "solutions." It is included only to indicate that the problems of congestion may not be as impossible to solve as the previous sections otherwise might imply, at least on an initial conceptual basis.

Section 1.2 pointed out that the basic concept of the General Plan addressed the need to reduce traffic congestion by concentrating origins and destinations along corridors of development. Following the same principle, employment zoning density conceivably could be reduced on properties that are not serviceable by transit, in order to concentrate employment and/or housing capacity near transit.

Perhaps one could even conceive of property owners near transit points being allowed to purchase development rights from owners of properties that are not serviceable by transit, in order to concentrate employment and/or residential capacity near transit. Appropriate areas for such infill possibly could be designated as concentrated commercial, industrial and/or residential "receiving" areas, and other areas more difficult to serve by transit could be designated as "sending" areas.

However it might be effectuated, the result of concentrating land uses along rail corridors, through such a program, would be the achievement of development patterns that would adhere to the basic "wedges and corridors" concept of the General Plan

more closely than present zoning patterns do, and therefore would enhance the effectiveness of further investments in transit.

In this context, it is important to remember that a great deal of the land within walking and shuttle distance of rail stations has been developed in "campus" settings. If, for example, a significant amount of the jobs in the "Reasonable Jobs Test" were concentrated in certain areas, by permitting a higher zoning FAR in these locations, many employment centers that previously have been developed on the basis of auto access might be induced to develop at densities that could support expanded transit service. Such infill development would require transit serviceable micro-scale design features, which would suggest the need for site plan review to insure that the necessary details were built into the fabric of each project.

2.5 The present divergence between employment capacity in the zoning envelope and planned transportation capacity possibly may become a problem in the future, if land use decisions by the

U.S. Supreme Court move more sharply in the direction of limiting the flexibility of state and local governments to use the police power to manage growth.

Experience indicates that residential zones do, in fact, tend to develop ultimately at the maximum permitted zoning density. In contrast, however, in commercial and industrial zones, it has not been uncommon for FARs to be assigned with the expectation that development may well occur at substantially lower densities than the FAR permitted by the zone's maximum. This practice of providing more employment holding capacity than many, if not most, developers will probably use, has had the benefit of giving the development industry more flexibility to adapt the available inventory of zoned land to the changing needs of the market place.

As a generality, the marketplace has not fully filled the available zoning envelope for commercial and industrial buildings, except where concentrations of prestigious retail and office space have generated rents that justify the costs of high density construction that includes structured parking. Such conditions, until the recent past, have only

occurred in central cities, and are just beginning to occur in emerging suburban employment centers.

One of the reasons that the current overall zoning envelope permits more density than can be developed in even a fairly long term future is that some employment zones, such as I-3, have at present no FAR limits other than those imposed on smaller properties by setback requirements. Although an FAR cap for I-3 is now being discussed by the Planning Board, the current average FAR for previously developed I-3 land in the County is 0.25. This figure indicates how few developers in the past have taken advantage of the potential capacity offered by I-3 land.

Future U.S. Supreme Court decisions possibly could change the context within which zoning capacity decisions are made. In the past, it has been possible to be somewhat generous with the zoning envelope, and then, when necessary, to "hold the line" on density at the time of subdivision, essentially using subdivision approval as a staging tool through the authority provided by the Adequate Public Facilities Ordinance.

Recently, the Supreme Court has handed down some decisions which say, in effect, that: 1) when private property rights are limited by government, through use of the police power, there must be a clear demonstration of public purpose, and the extent of the limitation must be clearly linked to the specific public purpose that is set forth in support of the action; and 2) when the police power is used to limit the private use of property so much that it is considered a "taking" of the property, the government must reimburse the property owner for the loss of revenue he incurred during the period between the time the police power regulation was enacted and the time it was found to be a "taking" by the courts.

Montgomery County's current two-tier system of short term, or "interim" staging ceilings applied through the subdivision process, and long term, or "permanent" ceilings applied through the zoning process, probably will not be jeopardized by these new Supreme Court decisions, provided that the system continues to be managed with as much prudence and thorough due process as has been the case in the past. Should the courts move further in the direc-

tion of restraining the flexibility of government however, the ability to sustain relatively tight subdivision ceilings against a backdrop of expansive zoning capacity possibly could become the target of litigation to break the effectiveness of the subdivision ceilings.

2.6 In retrospect, it can be seen that some of the above-noted divergence, between the basic concept of the General Plan and the zoning and transportation decisions that currently implement it has been the logical outcome of historical forces and events, such as a market demand for low density, rather than high density, housing subdivisions and employment centers, an increase in the number of workers per household, and delays in Metrorail and highway construction. Although these events have diminished the present level of achievement of the General Plan concept, the second traffic test reveals that it is still possible to adjust patterns to come closer to the original intent.

As noted earlier, development in the County has been relatively faithful to the General Plan, particularly in comparison to the

faithfulness other communities have shown to similar plans. However, one "timing" divergence from the Plan has resulted from the suburbanization of employment, fueled by the impact of electronic technology on business and society, which has only manifested itself clearly within the last five years or so. Such rapid growth in suburban employment was not foreseen by the General Plan, which, for example, never expected suburban commercial buildings outside of core cities to be more than two or three stories high. The General Plan also assumed that the District of Columbia would retain its regional dominance as an employment center.

This recent boom in suburban, high-tech employment growth in Montgomery County has been managed in accordance with the General Plan, in the sense that it has taken place for the most part in the urban ring and in the I-270 Corridor and has not been allowed to intrude into the wedges. The growth took place, however, to some degree before rail transit system was in place, and to a greater degree before a really effective bus transit system was in place.

Thus, even though most of the growth has

taken place within the I-270 Corridor, or along the emerging Route 29 Corridor, it has been designed by its private corporate developers around the basic concept of auto accessibility, which resulted in a development pattern dispersed enough that it is not easily transit- serviceable at present.

Employment buildings frequently were located on "campus" sites, surrounded by large landscaped parking lots even though the employment zoning envelope would permit much higher densities. Such sites can be provided with bus service, but low densities can make such service very expensive. Buses must go long distances to reach each destination, making the bus routes expensive both in terms of pickups per mile, and in terms of passengers' time. Moreover, they are held back by traffic congestion, unless special provisions are made.

A similar situation developed with regard to housing. Growth in the form of single-family detached housing has continued to be the preference of both new home buyers and the residents of existing neighborhoods. Although there was a considerable increase in townhouse construction in the late 1970s

and 1980s over the amounts previously provided, the result has still been, to a large extent, an extension of the previous automobile oriented pattern begun in the 1940s. The result, from the point of view of transit-serviceability, has been single-family subdivisions set back from major highways with winding streets and cul-de- sacs.

To insert more transit usage into these neighborhoods now requires a pattern of bus routes that tends to be, like those serving most suburban employment, unattractive in both pick-ups per mile and travel times for the low-density residential wedge areas. Construction of sidewalks and bicycle paths has not kept pace with development either, making it harder to make local trips without a car and to get to and from public transportation.

Another market factor is that workers per household have increased. The number of workers per household has increased by 15% from 1.37 in 1960 to 1.57 in 1987. This has meant an increase in the work trips generated per household.

Compounding the effect of these forces has

been the fact that road building, like Metrorail construction, has lagged behind development, in part due to inflation. Delays in road building often have meant that needed roads were opposed by residents already in place, so that it has been difficult to catch up. In particular, it has been very difficult to catch up with the need for east-west routes, as commuting to jobs within the County outgrew the old pattern of radial highways serving commuters to the District. As a result, when new residents in both Montgomery and adjacent counties tried to get to new jobs in the corridors, increasing numbers of intersections have become congested.

In summary, the economic and political forces of the 1970s and 1980s have resulted in relatively low-density land uses in the County, compared to the original General Plan, and have not yet developed in ways that would permit sufficient alternatives to single-occupant cars. The resulting traffic congestion has been further aggravated by delays in road construction, and by recent increases in the number of workers per household. However, future solutions to these current problems are not impossible, as the Reasonable Jobs Test has revealed. The remaining chapters explore further aspects of the General Plan assessment that should be integrated with those of this chapter.

3.0 WASTE DISPOSAL

While the basic concepts of the General Plan appear to be sound, the zoning and waste disposal infrastructure patterns that implement it may need adjustment to insure adequate long term public health safety.

3.1 Estimates of demand for sewer capacity suggest that substantial additional sewer capacity will be needed prior to buildout.

The availability of sewage treatment capacity to serve the County's needs has improved consistently since the State-imposed moratorium on new construction during the 1970s. Interstate regional agree-

ments on the shared use of an upgraded Blue Plains treatment plant in the District of Columbia, together with satellite smaller plants in the suburban jurisdictions, was the solution to the problem at that time. According to current plans, the major future additions to capacity for Montgomery County will come from the expansion of the Blue Plains treatment plant in the District, and the construction of the Rock Run plant at Avenel in the County. Smaller additions to capacity also will come from the release of some capacity at Blue Plains which is currently held in reserve, and from a proposed increase in the rated capacity of the Seneca plant within the County (see Figure 3A).

In spite of the improvement in the existing and planned capacity available to the County, however, existing plans do not provide

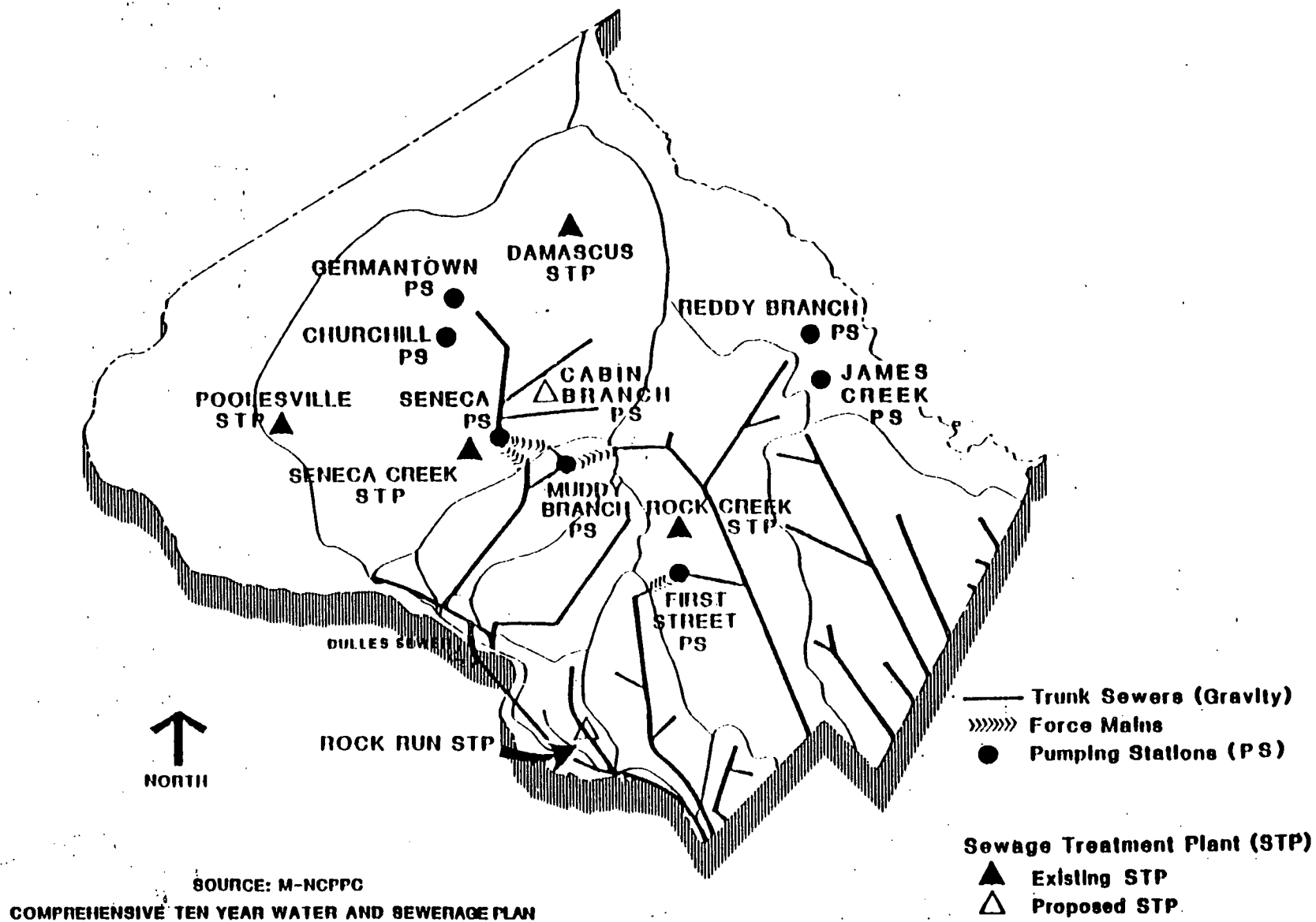


Figure 3A Schematic Sewerage System

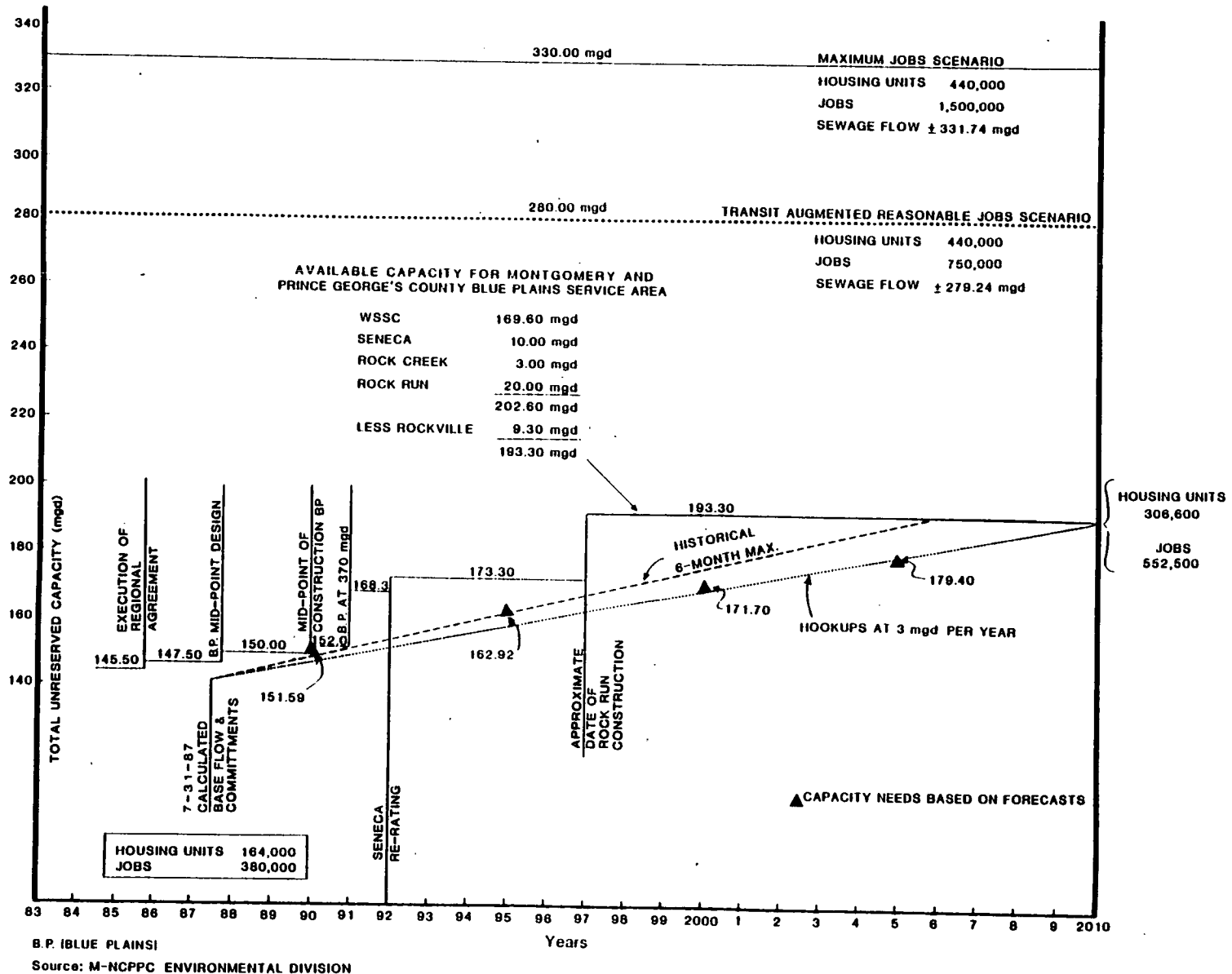


Figure 3B Sewage Treatment Capacity

sufficient capacity to accommodate full build-out of the current zoning envelope. At some point, a major new program for capacity above that already planned will be necessary.

Figure 3B shows the relationship between (a) the maximum sewage treatment capacity available to Montgomery County under current regional plans, and (b) the treatment capacity necessary to serve the two zoning scenarios tested through the traffic model and described in the previous chapter. Shown on the figure is one possible distribution of this capacity proportioned between jobs and housing at a J/H ratio of 1.8 (i.e. 553,000 jobs and 307,000 housing units). Many other proportional distributions within this capacity are possible, but the total sewage capacity available under current plans is well short of the needs of the lowest of the two zoning scenarios, the Transit-Augmented Reasonable Jobs Test.

Figure 3B shows that, under current intermediate rate growth forecast assumptions, the capacity provided by current plans is enough to last until after the year 2000, possibly till 2010 (i.e. a 15-20 year period from

now). There is time, therefore, to plan for how to accommodate the needs of the zoning scenarios. However, it may be prudent to begin such planning in the near term future, rather than wait 10 years, in order to permit land acquisition for treatment plants and trunk transmission lines before the opportunity and price become prohibitively difficult and high due to ongoing land development. Both plants and lines may present difficult problems, but the trunk transmission line question may be the most complex.

3.2 Sewerage Collection System. Expansion of the sewerage system to accommodate the Transit Augmented Reasonable Jobs scenario will require major sewer main construction. If additional sewage plant capacity is to be located below the District of Columbia, new trunk lines, force mains and pumping stations will be needed not only within Montgomery County, but also through the District of Columbia.

Figure 3A shows that the major growth areas of the General Plan, from Rockville to the north, all drain towards the Potomac

River. At present the Dulles Interceptor sewer line picks up this drainage pattern and transports it, through rock tunnels, under the densely developed areas of the County and District inside the Route 495 Beltway, to the Blue Plains regional plant on the south side of the Anacostia River. If a new sewage treatment facility, for the capacity needed beyond what is already planned, is to be located south of the District of Columbia, a major new trunkline sewer will be needed through this same area. Alternatively, other treatment plant locations will need to be found.

3.3 Solid Waste and Sludge. The County solid waste management program is based on a combination of extensive recycling, a mass burn facility at Dickerson, and a series of landfill projects. This system should be sufficient for the foreseeable future.

The sewage sludge program is predicated on an expanded composting facility at site 2 along the Route 29 Corridor. This site is now programmed for expansion from 200 tons per day to 400 tons, which should be sufficient to accommodate Montgomery County's share of sludge from the currently proposed Blue Plains plant.

Additional sludge expansion to 370 million gallons per day generated from the Transit Augmented Reasonable Jobs scenario (i.e. 440,000 housing units and 750,000 jobs) will require additional sludge composting facilities or other means of disposal such as incineration or a combination of these systems.

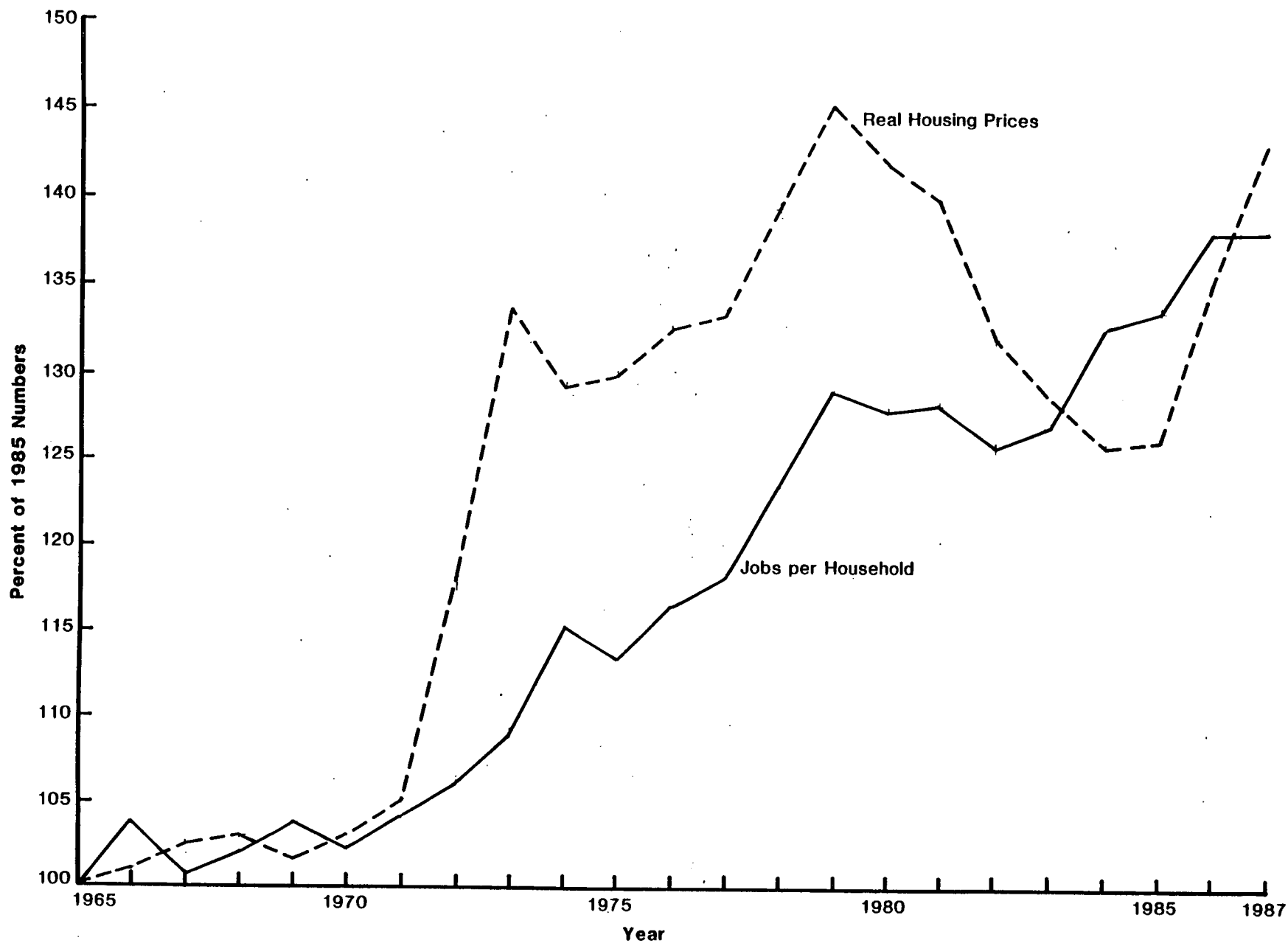


Figure 4A Jobs Per Household and Real House Prices

4.0 FISCAL, ECONOMIC, AND SOCIAL GOALS

While the basic concepts of the General Plan appear to be sound, the zoning and general public services infrastructure patterns that implement it may need adjustment to insure adequate long term fiscal, economic, and social balance.

4.1 Because it results in a relative shortage of housing near jobs, an increasing J/H ratio probably will result in house price appreciation and, therefore, a growing residential property tax base.

Figure 4A shows that the price of housing has increased in the past as the J/H ratio

has increased in Montgomery County. One partial explanation for the difference in the shapes of the two curves may be that the housing price curve is linked to, and driven through economic market forces by, the J/H ratio curve. This linkage could be exaggerated by a speculative component in housing prices that anticipates job trends. Whether there is a direct relationship between the two curves, it is obvious that employment growth generates increased housing demand and, in the absence of an adequate supply of new housing, this in turn generates price appreciation. More data and analysis would be needed, however, to explore the details of these relationships.

Figure 4A also is useful in showing that an increasing J/H ratio can increase the

property base in not just one, but two ways. The direct effect is from the value of the new commercial and industrial buildings that contain the jobs. The indirect effect can come from an increase in the price of existing housing.

The indirect effect of an increasing J/H ratio on housing prices, if the housing supply within the jurisdiction does not keep pace, is to raise the average price of the existing housing stock. Since the residential share of the property tax base is several times as large as the employment sector's share, this indirect effect could possibly increase the property tax base more than the direct increase produced by the additional commercial and industrial buildings.

Figure 4B shows the hypothetical future effect of house price appreciation over time on property tax revenues. The top graph in the figure simulates the fiscal impact of a typical 1,000-unit single-family subdivision during the first 55 years of its life cycle, based on the pattern that has prevailed here in the past.

Assuming continued appreciation approximating past levels, the subdivision would generate a fiscal surplus during the first year, when the subdivision has not yet produced many public school students, and the transfer tax has been paid. Beyond the first year, the subdivision would generate increasing deficits as the "yield" of students (and, therefore, costs for public education) rise faster than taxes on income and home value. These deficits would begin to decline in the 10th year, because of declining numbers of students, and of increased incomes and home values. By the 17th year, the subdivision would reach a fiscal break-even point. From there on out, the fiscal surplus would continue to rise, despite a small increase in student yields as neighborhood recycling occurs.

The bottom graph in figure 4B shows how dramatically the net revenue from a typical subdivision would change without house price appreciation. If houses were to fail to appreciate, it appears that the County would never fully recover the losses that would result from the high education costs that immediately follow construction of the subdivision.

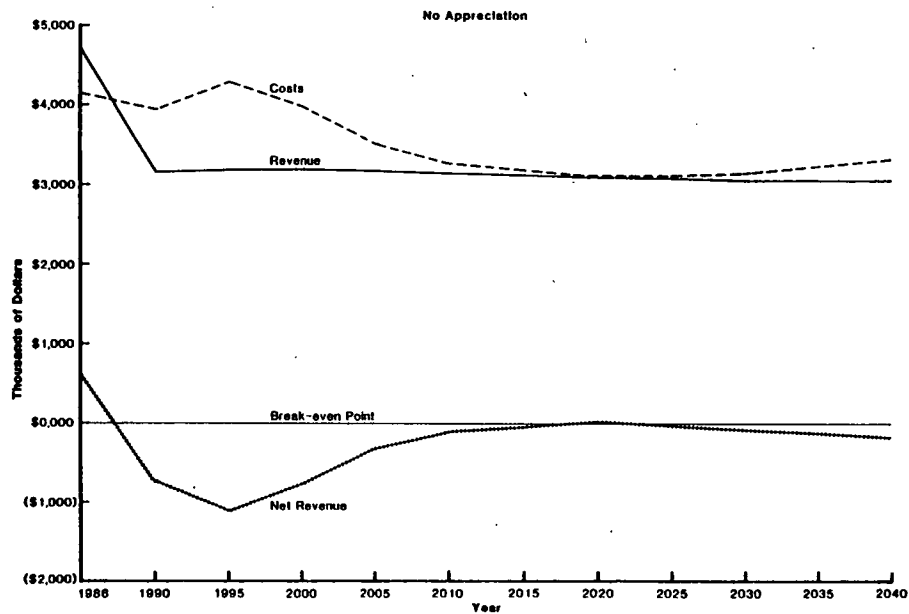
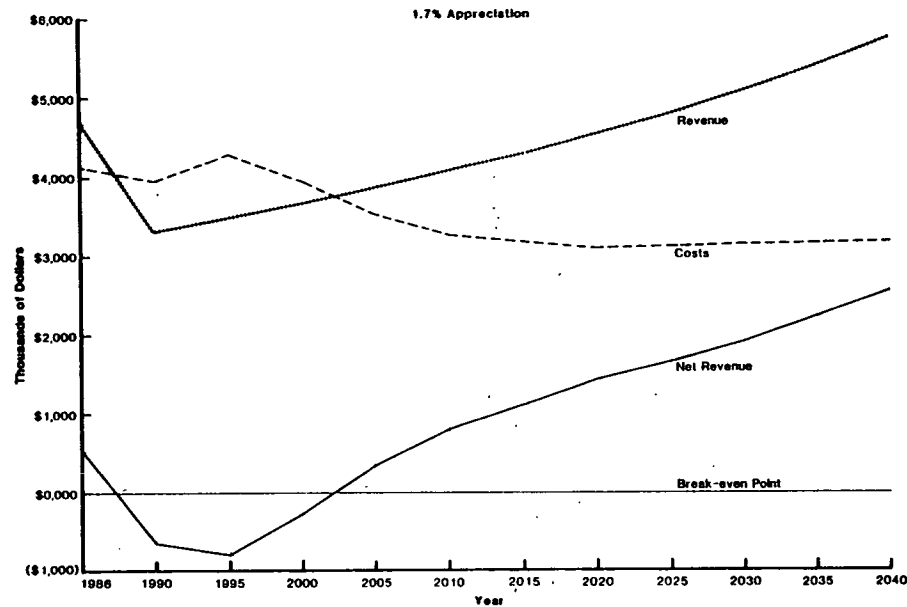


Figure 4B Revenues and Costs From a Typical Subdivision

4.2 In the real world, an increasing J/H ratio, and its resulting house price appreciation, tends to stimulate market pressure to produce new housing, with the result that the J/H ratio tends to be reduced again by the new housing production. Evidence suggests that the J/H ratio for suburban counties appears to be self-limiting at a level below 2.0.

Although, from a fiscal viewpoint, an increasing J/H ratio seems attractive, there appear to be limits to how much it is likely to increase in the real world, due to other forces that appear to come into play at higher J/H ratios. Figure 4C is a plot of J/H ratios versus tax burdens for a variety of relatively affluent suburban county governments throughout the nation in 1980. The figure indicates that it is difficult to find many counties with J/H ratios much higher than Montgomery County's has been for the last decade. Presumably, this is because of an increasing number of jobs which stimulates new residential construction where land for new housing is available.

In other words, the nature of the economic

linkage between the employment and housing markets appears to act as a self-regulating limit to further increases in the J/H ratio above a certain point, wherever there is enough land to accommodate the housing market demand. Obviously, this conclusion assumes that market pressure for new housing is not restrained completely by local zoning.

4.3 The housing price appreciation side effect of an increasing J/H ratio makes housing less affordable to more people. Seeking to offset this social problem through governmental housing subsidies puts pressures on fiscal policy.

An additional consequence of appreciating house prices is that they make housing in the County generally less affordable. House price appreciation conflicts with the County's goal of providing affordable housing for people at all economic levels. Although the effect of appreciation can be offset, to some extent, by County supported housing subsidy efforts, these efforts, in turn, put pressures on the tax revenue. At this point, desirable social policy tends to come into conflict with prudent fiscal policy.

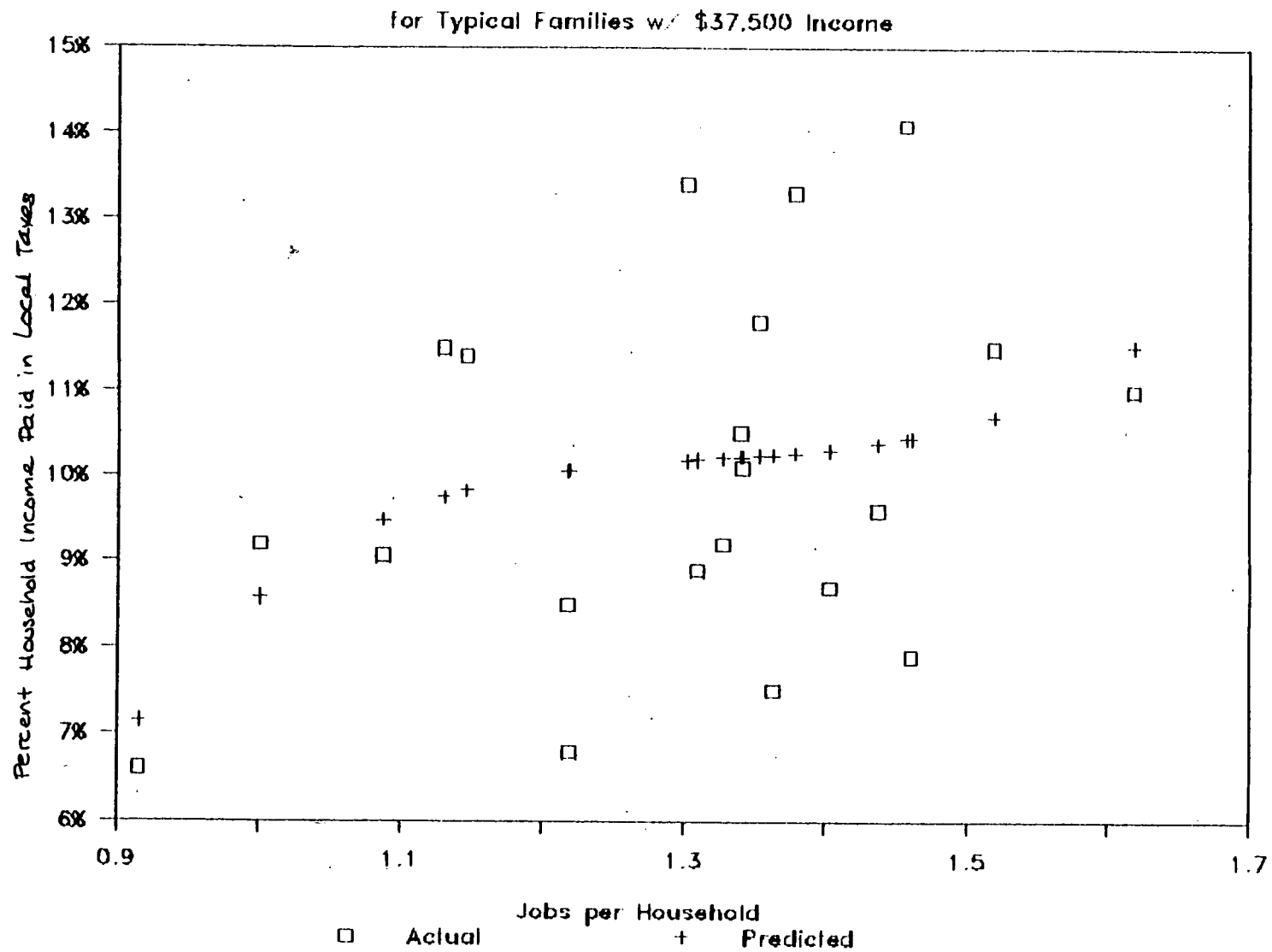


Figure 4C Percent Local Tax Burden by J/H Ratio, 1980

4.4 Demographic forecasts suggest that, under normal economic conditions, the current number of workers per household will decrease in the future. This will increase the number of housing units necessary to serve the same number of jobs. This, in turn, will tend to increase the price of existing housing, and create more demand for new housing. This effect is independent of the rate of growth in jobs.

The number of workers per household in the County has risen from 1.37 in 1960 to 1.45 in 1980 as more women have entered the work force. This rising trend has now peaked and is expected to begin to reverse by 1990. The expected reversal may be caused by a combination of factors, including continuing decline of household size, leveling off of the rise in participation in the work force by women, and increases in the number of retired persons still occupying housing within the County. Montgomery County Planning Department projections suggest that this decline may continue well into the next century. A decline in the num-

ber of workers per household is equivalent to an effective increase in the J/H ratio, which again means more pressure on the housing supply.

4.5 The tax benefits of an increasing J/H ratio will tend to diminish as costs rise to provide roads and other transportation facilities so that workers from other jurisdictions can get to Montgomery County jobs.

As the J/H ratio increases, above a certain point, the growing relative scarcity of housing requires workers to commute to jobs from outside the County. The result is pressure for new transportation facilities, which become increasingly expensive when major new trunk lines are involved. A recent estimate by County Council staff concluded that the current cost in new roads for each new job in the County is about \$650 per year. This amount presumably would increase further as the proportion of County workers living outside the County increased.

4.6 Since it appears, from the above analysis, that the J/H ratio tends to be self-limiting above a certain point, and therefore cannot be expected to rise as high as the current zoning envelope would permit, the fiscal, economic, and social impact of this ratio should be considered carefully, both in current planning and work at different stages of buildout.

As noted above, in the real world both increasing transportation costs and increasing house prices are economic side effects of an increasing J/H ratio which tend to put a limit on how high the J/H ratio of a jurisdiction actually will rise. In addition, a plot of J/H ratios for other counties shows that Montgomery County's current ratio of about 1.6 in 1987 is among the highest in the nation. No counties were found with ratios higher than 2.0. Finally, as buildout approaches, the ability of the County to alter its J/H ratio will become increasingly limited, because significant changes in either jobs or housing will increasingly mean taking on the difficult challenges of redevelopment.

In Section 2.3, 750,000 jobs and 440,000

housing units was tested, with the preliminary conclusion that these amounts probably could be accommodated from a transportation perspective, if more effort and resources were assigned to planning an appropriate micro-scale pattern of zoning and transit. These numbers would still leave the County with a J/H ratio of more than 1.7 at buildout.

Other alternative amounts and proportions of jobs and housing could be tested for transportation and fiscal impact. Other permutations, such as increasing the supply of higher density housing in transit-serviceable locations while leaving the number of jobs constant, could reduce the traffic impact while still maintaining a reasonable J/H ratio from a fiscal perspective.

It must be emphasized that the work on which this section is based is too new and exploratory to be conclusive. While some relationships, like the relationship between the J/H ratio and housing prices, appear to be relatively clear, more experience in probing and evaluating these tentative conclusions is necessary. It is not presently possible to determine with confidence the weight that should be given to the fiscal,

economic or social impacts of the J/H ratio. It is possible to say, however, that any Comprehensive Growth Policy should not ignore

how the J/H ratio will affect the County's traffic congestion, fiscal health, and quality of life at different stages of buildout.

5.0 COMPREHENSIVE POLICY

A Comprehensive Growth Policy Study should be undertaken to provide a reference framework for insuring that both long range master plans and the Annual Growth Policy remain consistent with the basic concepts of the General Plan.

Previous sections have suggested that the basic concepts of the General Plan remain valid. In particular, the basic concept of wedges and corridors can still do a great deal to address the problems of traffic congestion. Analysis of the balance between the zoning envelope and the planned transportation capacity, however, suggests

that additional work is needed to be sure that they work together to produce corridors that function as effectively as envisaged by the General Plan.

Previous sections have also made clear that additional sewage treatment capacity ultimately will be necessary, beyond that already planned for. Finally, previous sections have made clear that the ratio of jobs to housing at various stages of buildout can have significant implications for the County's fiscal, economic and social goals.

These are all broad issues of a kind that are significantly influenced by timing assumptions at a regional scale. As such, they affect not only long-range zoning and public facilities planning, but also the An-

nual Growth Policy (AGP). At present, however, taking such issues into account in both the AGP and master plan work is difficult. The AGP looks ahead only a short distance in time, and the area master plans embrace only limited areas in space. There are as yet no crisp alternative scenarios which are both long range and County-wide or regional in scale, to make clear how the concepts of the General Plan could best be

worked out in terms of current plans and short term growth ceilings.

The logical next step appears to be to develop such alternative scenarios, as a frame of reference for ongoing master plan and AGP work. The Planning Board's recommended work program for fiscal year 1989 includes such a work effort, which it calls a Comprehensive Growth Policy Study.

APPENDIX A. Documents that Comprise the General Plan

Master Plans

Aspen Hill and Vicinity Master Plan, 1970

Bethesda Central Business District Sector Plan, 1976

Bethesda-Chevy Chase Master Plan, 1970

Boyd's Master Plan, 1978; Revised 1985

Capitol View Sector Plan, 1982

Clarksburg and Vicinity Master Plan, 1968

Damascus Master Plan, 1982

Eastern Montgomery County Master Plan, 1981

Forest Glen Sector Plan, 1978

Four Corners and Vicinity Sector Plan, 1986

Friendship Heights Central Business District Sector Plan, 1974

Gaithersburg Master Plan, 1985, 1971

Germantown Master Plan, 1967 (1974 Comprehensive Amendment)

Glenmont Sector Plan, 1978

Kemp Mill-Four Corners Sector Plan, 1967

Kensington Sector Plan, 1978

Kensington-Wheaton Master Plan, 1959

Master Plan of Schools, Parks, Recreation, 1956

Master Plans of Highways:

Preliminary Master Plan of Highways for the Maryland-Washington Regional District, 1967 (not adopted)

Master Plan of Highways for the Maryland-Washington Regional District, 1953 (last official one adopted; subsequently amendments to Master Plans and the General Plan contained all road revisions. A map revision was done: "Revised Master Plan of Highways, 1955")

Master Plan of Highways, 1945, Maryland-Washington Regional District

Preliminary Master Plan, Maryland-Washington Regional District, 1932 (of Highways)

North Bethesda Sector Plans, 1978

North Bethesda-Garrett Park Master Plan, 1970

North Silver Spring Sector Plan, 1978

Olney Master Plan, 1966; Revised 1980

Poolesville Master Plan, 1980

Potomac Subregional Master Plan, 1980

PROS I - Parks, Recreation, Open Space, 1978

PROS II - Preservation of Agriculture and Rural Open Space, 1980

Rock Creek Master Plan, 1968

Sandy Spring-Ashton Special Study Plan, 1981

Sector Plan for the Transit Impact Area in Takoma Park, 1974

Shady Grove Sector Plan, 1977

Silver Spring Central Business District and Vicinity Sector Plan, 1975

Silver Spring East Sector Plan, 1977

Takoma Park Master Plan, 1982

Upper Northwest Branch Master Plan, 1961

Westbard Sector Plan, 1982

Wheaton Central Business District Sector Plan, 1978

General Plan

"...On Wedges and Corridors; A General Plan for the Maryland- Washington Regional District," January 1964

1969 Revisions:

"Updated General Plan," December 1969, Goals, Objectives, Guidelines

"General Plan Elements," December 1969

"General Plan Elements: A Summary," December 1969

"Factors Influencing Development," December 1969

"Looking Ahead, 1958-1980; A General Plan," August 1957

Annual Growth Policy

"Directions for Growth Policy in Montgomery County," Final Report of the Advisory Committee on County Growth Policy, August 1974

"Framework for Action," 1st Annual Growth Policy Report of the Montgomery County Planning Board, October 1974

"Fiscal Impact Analysis," 2nd Annual Growth Policy Report of the Montgomery County Planning Board, September, 1975 (one volume plus appendix and sequel #1, "Fiscal Impact Analysis")

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APPENDIX B. Summary of Delays and Cancellations of Major Transportation Projects in Montgomery County

This summary is based on Transportation and Public Facilities 1963-1987, prepared by John Conway, December 1987

1) Delays in Metrorail

Timely construction of the full Metrorail system was obstructed by the uncertainty of Congressional funding, the debate over the location of metro stations and parking facilities in the suburbs, and spiraling costs due to inflation in the 1970's. There was considerable exchange/debate between the "administration," who wanted to build less than the full 98-mile system, and the County Executive, who was quick to threaten the withdrawal of all funds from Metrorail under such circumstances. The following list details typical examples of Metro's delays.

(1969-1972) The Highway Act of 1968 stipulates that Washington must build its freeway network, particularly the North Central Freeway, if it wanted rapid transit funds.

Congressman Nachter withholds funds for Metrorail maintaining that the district was not obeying the Highway Act.

(1972) Metro announces 2-year delay in opening system, expected date of completion - 1979.

(1972) Debate begins over the location of subway stations and parking facilities.

Chairman of the Washington Suburban Transit Commission threatens to withhold county funds if the Silver Spring station is not located to the east side of the tracks.

(1974) Metro costs increase 19% to just under \$3 billion.

Resident opposition to the Forest Glen station.

(1975) DC government asks federal approval to spend \$500 million in unused interstate highway money to help complete the financially troubled rapid transit system.

(1975-1976) Debate over the location of the Forest Glen station.

(1976) The Department of Transportation threatens to cut Metro construction by \$300 million and to reconsider the Glenmont line.

(1977-1978) Department of Transportation Secretary calls for further studies justifying the need for the Glenmont line.

County Executive refuses to transfer funds to Metro unless he receives assurances from UMTA that the Glenmont line will be built.

(1980) County Executives in Montgomery and Prince George's Counties disagree over a split in state money, causing work throughout the region to be delayed.

(1981) U.S. Secretary of Transportation announces that the President is intent on postponing the last 40 miles of Metro to save money.

State decides to pay the federal share.

(1980) Ongoing construction and funding problems with the Glenmont line.

2) Delays in Highway Construction

Delays in Highway construction are typically the result of lengthy debate over route alignment, lack

of funding, the assertion on the parts of citizens and various agencies that further studies are required, and citizen opposition to road improvements and extensions.

A. North-Central Freeway Wisconsin Avenue Corridor/Rock Creek Parkway Palisades Freeway.

(1963-1971) All of these highways represent attempts to find an interstate route linking I-70S (I-270), at its intersection with the Capital Beltway, to the freeway system in D.C.

The Highway Act of 1968 linked funding for the N-C freeway to funding for the proposed rapid transit system.

The fate of these four highways and the rapid transit system was hopelessly intertwined. The N-C freeway was finally nixed due to considerable citizen opposition, disagreement among public agencies, and disinterest on the part of public officials.

B. Intercounty Connector - Outer Beltway - Rockville Freeway - Rockville Facility

(1963-1987) Outer Beltway - Debate and subsequent delays over the construction of the Outer Beltway centered on route alignment and, particularly, where the Outer Beltway is to cross the Potomac.

(1970) Disagreement and delays by the county over the attainment of the right-of-way does not prevent the construction of homes in the right-of-way.

(1974) The County Council and citizens demand further studies on the need for an Outer Beltway as opposed to mass transportation.

(1977) Maryland Department of Transportation develops plans for lengthy studies of the Outer Beltway and Rockville Facility.

C. Intercounty Connector - Rockville Facility

(1963) One of the more controversial issues in Montgomery County Centers on the fate of the Intercounty Connector and the Rockville Facility. This ongoing debate is exemplified by the following:

(1980) County Executive recommends to the State Highway Administration that the Rockville Facility be dropped from further study.

(1981) SHA continues to study the feasibility of the Rockville Facility - Intercounty Connector.

(1981) Organized citizen opposition to Rockville Facility.

Considerable discussion among various agencies on route alignment.

D. Great Seneca Highway

(1985) The federal government delays releasing land through Seneca Park in order to allow the Interior Department sufficient time to review route alignment.

The National Park Service postpones a decision on the route alignment of Great Seneca Highway.

(1987) Route approved.

E. Mid County Highway

(1960-1970) Citizens delay plans for Mid-County Highway in hopes that mass transit will relieve congestion.

(1976) Costs of the Mid-County highway doubles and the State lacks the necessary funds.

Present Citizen opposition to the Mid-County highway extension due to environmentally sensitive wetlands.

F. Georgia Avenue

It took 20 years for the Department of Transportation to make needed improvements on Georgia Avenue from Norbeck to Route 108.

G. Montrose Road

(1980's) The proposed widening and extension of Montrose Road are deferred for several years due to considerable citizen opposition and a question of need.

H. Randolph Road - Norbeck

(1980's) Needed improvements of these two roads are delayed by nearby residents, and by the need for an environmental assessment of construction projects and the lack of state state funds.

I. I-270

(1980's) The widening of I-270 is deferred until sufficient environmental impact and alternative studies are prepared.

J. Democracy Boulevard

(1960-1980's) The extension and widening of Democracy Boulevard are initially stalled due to its interrelation with the fate of the Outer Beltway, and, when that issue subsides, delays result from citizen objection.

K. I-370

(1981-1985) In 1981, Governor Hughes refuses to provide needed funds for I-370. Funding problems plague the project.

L. Seven Locks Road

(1969) Postponements of improvements and new construction are the result of citizen opposition, and, particularly, of route alignment.

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